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The Rubber Shortage Bugbear

OF all the pretexts used for raising the price of crude rubber none has proved more effective than that of a likely world shortage in the near future. With consumption mounting fast, plantation exports greatly restricted, but little additional planting being done, and development of new and exploitation of old rubber areas much less than had been expected, the argument for the early deficiency forecast has seemed unassailable.

On the other hand, the operations of large scale growers and buyers of crude rubber, of men whose caution and shrewdness ordinarily command admiration, would seem to indicate that in well informed quarters there is not great anxiety about rubber scarcity. In fact, their transactions are encouraging the belief that although rubber may be dearer within a few months, within a few years, however, it will be in ample supply and at prices not much higher than at present.

A case in point is that of the largest Dutch rubber planting company which has contracted to supply one of the large American rubber manufacturers with 5,500,000 pounds of crude rubber yearly for 1926, 1927, 1928, and 1929 at average London prices, guaranteeing a minimum of 1 shilling 2 pence per pound and providing that if the average price rules higher than 1 shilling 5 pence the difference shall be split equally. From these terms it is assumed that the big Dutch company estimates that within three years production will equal if not exceed consumption.

British forward contracts are more confusing as indices of the market trend. The fact that contracts have been made for 662,000 pounds at an average price of 2 shillings 2 pence for 1930 is taken to mean that current conditions may then be duplicated, and that overproduction meanwhile is improbable. Some interim contracts, however, are for less than 2 shillings and some range as high as 3 shillings 6 pence for similar periods, the reasons for the wide variances not being given. Some 3 shilling contracts for 1929 are supposed to presage a scarcity. But many things may happen between now and then, and unless the rubber industry fails to run true to form, it will be the unexpected that will happen.

Gutta Percha Anti-Oxidant Needed

NOW that the chemists have given us anti-oxidants that make rubber last longer and wear better, makers and users of gutta percha goods are hoping that they will soon be aided in the same way. Gutta percha may be a shrinking violet as compared with rubber, but a great deal of it is used nevertheless. A considerable amount is required for insulating ocean cables, much is needed for golf ball covers, and for making tissue, tubing, and other things. Gutta percha lasts indefinitely in salt water, but in the air, like rubber, it perishes. The purer it is the sooner it breaks down. Absorbed atmospheric oxygen forms a hard, brittle resin quite different from that found

in the original material, and at the same time the gutta loses much of its toughness. Strong light and alternate wetness and dryness help in oxidizing, aided possibly by alkaline salts and decaying organic substances in the native "gum plastic." Oxidizing may cause minute pores and fissures through which moisture may penetrate insulation and cause electric leakage.

Attempts have been made to help gutta percha to grow old gracefully by mixing in it ingredients that lessened its most prized qualities or by coating its products with varnishes that were soon worn off, instead of treating the trouble at its source. Something must be put in the gum to check an affinity for oxygen and to lessen the latter's activity. While helping makers of gutta percha goods, aid might also be given the makers of gutta-base products. Balata belting manufacturers seek a substance that would make their goods more durable and efficient, and chewing gum makers would be grateful for a nonpoisonous preparation that would keep their chicle products from drying up too soon.

Establishing International Standards

As the adage puts it, the shallows murmur but the deeps are dumb. So, too, is it likely that the blessings of international peace and enhanced prosperity are more likely to be achieved through the quiet commingling of industrial leaders of many countries frankly seeking to eliminate waste and friction that retard human progress, than through the much-heralded activities of bodies ostensibly aiming to link the political fortunes of the nations. The first class confers with an open mind and lays all its cards on the table; the second too often brings distrust, jealousies, reservations, with ways that are dark and tricks that are vain.

A case in point was the recent formation, without fanfare or press-agenting, of a general organization for industrial standardization. The United States and other countries have for several years had national standardizing bodies that separately have effected reforms in manufacturing and merchandizing of incalculable value, but the more such bodies have interchanged data the more obvious has become the advantage of an international alliance. Happily such a league is now assured. The draft of a constitution for the International Standards Association has been unanimously approved by representatives from eighteen countries, and the new body will have aims akin to those of the eminently efficient American Engineering Standards Committee.

The American rubber industry welcomes the new enterprise and will gladly do its share in furthering the purposes of the I. S. A. Briefly the latter's aims include providing simple, systematic means of interchanging information on standardizing work, lessening international misunderstanding, developing all sorts of useful standards and promoting their uniform adoption. It is possible that this organization may yet render some of the most valuable service the commercial world has ever experienced.

Big Business Grows Better

Ten years' study of the enforcement of the Clayton Act and the operation of the Federal Trade Commission has convinced the National Industries Conference Board that governmental regulation of business, even though wisely conceived and well administered, can never so effectively correct the major and minor ills of the trade as the regulation of business from within. In other words, the board's analysis shows that the preservation of competition in business, about which there has been much anxiety, can be better assured through the broadening code of business ethics than through any form of government control yet devised.

Within the past decade the Trade Commission had taken under advisement 8,632 requests for action to prevent unfair competition, but of these only a very few had been directed against the larger corporations, which fact is taken to indicate that big business finds it advantageous and is more disposed than ever to operate on a higher plane; and that the less stable, transient concerns have in the recent past been the chief offenders with their fraudulent and predatory tactics.

Guayule to the Fore

While Castilloa failures in Mexico have cost millions, guayule cultivation through the efforts of one great company is a success. After years of experiment in the difficult problems of location, soil, seed production, nurseries, and variety selection, there comes ultimate triumph. No less difficult were the mechanical problems of propagation, planting, cultivation and harvesting by machinery especially designed for the work which has made it possible for one well paid American farmer or mechanic to produce that which required fifteen plantation coolies continuously employed, and this with a plant that not only stands frost but requires it. Our congratulations to the patient and courageous Intercontinental Rubber Company and its far visioned officers and directors. They have added another key industry to our resources.

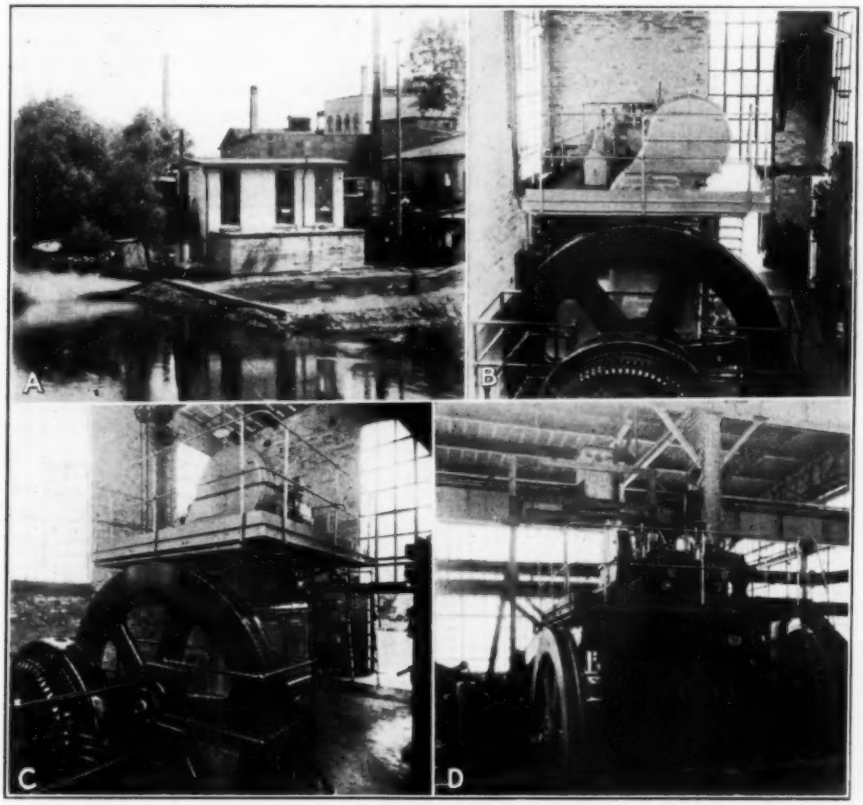
It is gratifying to note that discussion of the rubber situation has lost much of its early bitterness; and that the subject is debated now more on its merits and with fewer patriotic appeals and threats of retaliation. Broad-minded American business men do not blame the British for seeking with restriction a fair price for their raw material while Americans with high tariff are insuring fair prices for their finished products. Moreover, they well realize that were it not for British foresight, sacrifice, and enterprise in establishing the rubber planting industry the marvelous development of the American automobile industry would have been impossible.

Dopesters have discovered a new use for rubber. They fill finger cots with narcotics and camouflage them in tooth paste tubes. Such a morphine case is said to contain as much as $100 worth of the drug.

The Falk-Diesel Oil Engine

Explosion and Constant Pressure Oil Engine Types—Rubber Factory Installation

THE unsurpassed fuel economy and ability to burn low-priced liquid fuels of high boiling point, is characteristic of both large and small Diesel engines. They were first perfected for marine use because they are self contained, require minimum fuel storage space, exert their full power quickly and are reliable as steam engines. These basic advantages apply as well in the industrial as in the marine field. The Diesel engine is superior for continuous duty at high loads on account of fuel economy and low operating cost. Its economy may even exceed that of electric power delivered by a public service company as was the case with the installation here described. The adoption of the Diesel engine by industrial plants is new but seems destined to increase rapidly for economic reasons.



(A) POWER HOUSE. *(B)* AND *(C)* POWER HOUSE INTERIORS. *(D)* SIDE VIEW OF FALK-DIESEL ENGINE

Falk-Diesel Engine Installation — Bickett Rubber Products Corporation, Watertown, Wisconsin

In the interests of efficiency in production, refining and utilization of petroleum the Department of the Interior, Bureau of Mines, has issued a bulletin on the Diesel engine[1] of interest and value to engineers and plant managers. The following extracts from this bulletin show how the Diesel engine differs from the explosion type of gas engine used in automobiles.

The term "oil engine" refers to internal-combustion engines that burn directly in the cylinder heavy liquid fuel of high boiling points, the fuel being injected into the compressed air shortly before or at the completion of the compression stroke. The distinguishing features of oil engines are that the fuel vapor is not absorbed by air before it is admitted to the cylinder, and that no inflammable mixture of vapor and air is compressed preceding its ignition. Oil engines compress air alone, and the heat of compression is used to ignite the fuel which burns by consuming the oxygen of the air in the cylinder, the engine transforming the heat energy into work. To facilitate and accelerate the burning of a liquid fuel it must either be vaporized, atomized, or intimately mixed with air immediately preceding its ignition in the cylinder.

The process of charging the air with fuel vapors is called carburetion. The more volatile fuels, like gasoline, can be carbureted at ordinary atmospheric temperatures; that is without previous heating of the air or the fuel. Liquid fuels with higher boiling points may require heating of the air or fuel, or both, to bring about their evaporation and absorption by the air preceding combustion. In the heavy-oil engine the vaporizing of the fuel takes place inside of the engine. As a fuel with a high boiling point can not be evaporated at moderate temperatures, thorough mechanical division preceding ignition and combustion is necessary.

According to the means used for atomizing the liquid fuels and igniting them, there are two mechanically and thermodynamically distinct types of engines. In one type the entire fuel charge is sprayed against a highly heated surface in a chamber connected

[1] "The Diesel Engine, Its Fuels and Its Uses." By Herbert Haas, United States Bureau of Mines. Bulletin 156, Petroleum Technology, No. 44.

with the working cylinder. Contact with this highly heated surface gasifies the fuel, which is ignited and burns with explosion-like rapidity. Engines of this type are termed "explosion oil engines," or engines in which the fuel is burned at constant volume.

In engines of the other type the fuel to be converted is finely subdivided by air, and in this act of atomization is injected directly into the engine cylinder, where it is ignited automatically by the highly heated air in the cylinder. The combustion is not explosion-like, but is prolonged at constant pressure for the entire period during which the fuel is injected into the cylinder. This type of engine is universally known as the Diesel, named after the late Rudolph Diesel, of Munich, Germany, its inventor.

An analysis of the power requirements at the rubber factory whose installation is herein described showed an average load of 90 to 120 kw. This varied from loads of 40 to 50 kw. for periods of 15 to 20 minutes' duration with peak loads of 175 to 190 kw. for periods of 5 to 15 minutes' duration, to maximum peaks of 240 to 250 kw. for brief and irregular intervals of 1 to 5 seconds. It was found that 500 h.p. was needed to carry the maximum peaks but an engine of this size would prove too large for economical operation at ordinary loads. The problem was solved by using a 300 b.h.p. engine for maximum efficiency at ordinary loads with the addition of a heavy flywheel for taking up the maximum peaks. This engine has been in operation nearly four months. Three months' continuous operation under a great variation of loads showed a total cost of 1 cent per kw. hr. for produced power as against 3.5 cents per kw. hr. when purchased.

The brick power house shown at *A* in the illustration houses a 300 b.h.p. solid injection, 4 cycle, 2 cylinder Falk-Diesel oil engine direct connected to an Allis-Chalmers 250 kva., 220 volt, 3 phase, 60 cycle, a. c. alternator with a 15 kw. belt driven exciter. The auxiliary machinery consists of one kerosene driven compressor, three starting air receivers, the necessary oil and water pumps and a central switchboard fitted with a voltage regulator. The 15,000 gallon fuel tank is in the foreground and a Maxim silencer on the left of the picture. A turbo-blower is housed in a separate room so constructed that it serves as base for the Maxim silencer.

Illustration *B* shows the interior of the main engine room with engine, flywheel and alternator in the foreground. At the right is the air compressor for filling the starting air receivers with compressed air at 250 pounds per square inch. The fuel supply tank is shown immediately above on the wall.

Accessory equipment includes a Bowser oil dispenser, starting air tanks, De Laval lubricating oil purifier, motor driven water pump for cooling engine, and pump for fuel oil from the main tank to the supply tank all of which will be seen in the background of illustration *C*.

The engine is solid injection, 4 cycle, 2 cylinder type, with 18-inch bore, 22½-inch stroke, and is rated 300 h.p. at 257 r.p.m. and is shown in illustration *D* on the assembly floor of the Falk plant. The control stand, or throttle, can be seen next to the flywheel. The fuel injection pumps, located on top of the engine where they are easily accessible, are driven from the camshaft, driven in turn by a Falk herringbone gear train.

This engine does not need a technically trained operator because it is designed primarily for extreme simplicity and ease of operation. A very efficient system of instruments is provided which obviates guesswork in regard to the vital condition of the engine at any time during operation. Thermometers are attached to all main bearings, pyrometers are placed on the exhaust line at each individual cylinder to indicate at a glance whether or not each cylinder is delivering its full quota of power. Thermometers are provided also on each cylinder head for cooling water and on the lubricating oil cooler recording the temperature of the oil as it enters and leaves the engine. Pressure gages and alarm systems on oil lines indicate whether the engine is receiving the correct amount of lubrication. Lubricated by forced feed, the oil is pumped from the supply tank, through a cooler and a De Laval oil purifier thus assuring properly conditioned oil. A hand pump fully lubricates the engine before starting without waiting for lubrication from the power pump.

Fuel oil is pumped from the main supply to the service tank by means of an electrically driven gear pump with overflow provision returning surplus oil to the main tank by gravity. The fuel injection pumps are of the overflow type also and return all surplus oil to the service tank shown in illustration *B* over the air compressor. No air compressor is needed for the atomization of the fuel during the injection period for the engine, being of the four cycle type, the piston draws in a charge of pure fresh air during each suction stroke and compresses it to about 375 pounds per square inch during the compression stroke. A few degrees before the piston reaches upper dead center the injection pump begins to force the fuel charge into the hot air contained in the compression chamber. The temperature of the air at this time is approximately 1,000 degrees F. This chamber is of very peculiar design. Its sides are perfectly flat, the intake and the exhaust valves being located in the top plane and air injection nozzle fitted at each of the extreme ends. A rectangular opening extending over the full width of the chamber connects it with the piston space. This opening is located out of center so that the chamber is irregular in shape with the result that the greater part of the combustion air is contained at one side. The two spray nozzles are set unsymmetrically. Their axes meet in that side of the chamber which contains the smaller amount of combustion air. The injection begins shortly before and terminates sometime after upper dead center.

The arrangement of chamber and sprays causes the sprays to meet eccentrically to the main body of combustion air. At their meeting point they produce a thick, flaming mass of fuel which is so much oversaturated that only a small part of it burns in the surrounding combustion air, but the injection is so timed that this outwardly flaming, oversaturated mass of fuel begins to form just as the piston begins its downward stroke. The fuel rushes toward the opening where it meets the highly compressed hot pure air coming from the other side of the chamber. A very complete mixing of both in the throat with violent combustion in the piston space is the consequence. This process continues until the last of the fuel has been injected. The design of the compression chamber and the process of combustion are new and make possible the attainment of very high mean effective pressures.

Another development in connection with the compression chamber are the fuel sprays. The chamber is made with flat sides in order to accommodate the sprays which are also flat. At their meeting place the sprays just fill completely the width of the chamber so that the fuel mass extends from one side to the other. On the downward stroke of the piston the pure combustion air meets a uniform layer of fuel, thus establishing the conditions for maximum contact and optimum mixing. The engine operates with a mean effective pressure of 83.3 pounds per square inch when delivering 300 h.p. at 257 r.p.m. to the generator. Very much higher mean effectives have been developed without straining the engine.

The Falk-Diesel engine was designed to gradually increase the cylinder output without sacrificing simplicity. When similar outputs are attempted with engines of other design it becomes necessary to fit the piston with some means of cooling, lubricating oil being generally used. The new engine operates with very good combustion and low cycle temperatures, consequently the need has not arisen to cool the pistons. In order to further reduce the temperatures of the pistons a motor driven scavenging blower is installed. The scavenging air sweeps the compression chamber clean of the remnant gases of the previous combustion and also cools the exhaust valve. At full load the exhaust thermometers show a temperature of 650 degrees F. without, and 600 degrees with the blower in operation. The engine, being of the four cycle type, does not require operation of the blower when starting nor when the engine is running at low loads.

Automatic Cutting Machines in the Tire Industry

Early Development of Accurate Machinery for Cutting Fabric and Rubber—New Machines for Cutting Rubber to Measurement

WHILE the cutting problems of the tire industry are simple compared with those of footwear, for that very reason they have been too long neglected, and it is only in the last few years that more accurate cutting and the elimination of hand methods in favor of automatic operations have been accomplished. Formerly it was not uncommon to return as high as fifty per cent of the tread, sidewall, and inner tube gum stocks to be remilled and calendered as the result of necessary trimming to meet correct measurements. The old time mill men were accustomed to view this practice with indifference, their argument being that the material was not wasted. But the power, machine time, and labor of reprocessing this material, to say nothing of the softer consistency of remilled compound, were not taken into consideration.

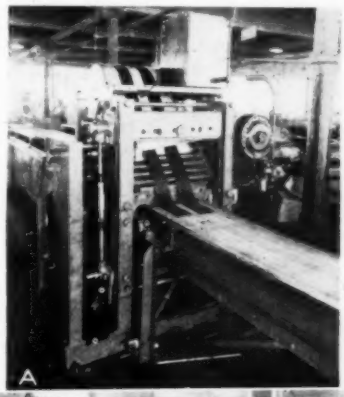
Today's practice of running tread stock is rapidly shifting from calendering to tubing. Continuous units of Banbury mixers, mills, tubers, and automatic cutters take the raw materials and form the correct length, gage, and weight of tread, without rehandling or interruption. One type of cutting machine enables the calender or tuber to be speeded up to at least double the rate possible when tread lengths were cut by hand at haphazard lengths. The machine will cut within ¼-inch of the specified length, and treads are now being run so closely to volume that the cut product is within one or two ounces of the specified weight.

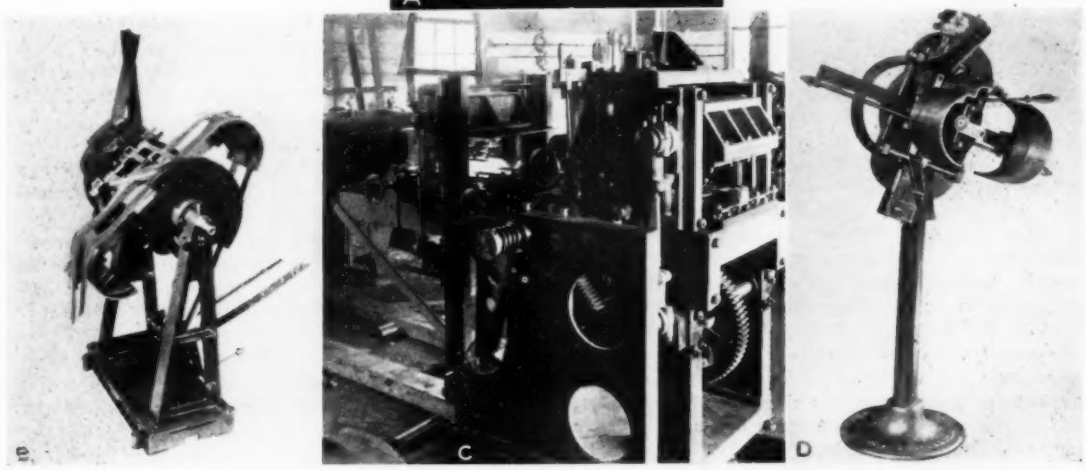
In operation, the tread stock leaves the calender or tuber and is cooled in water; then if the stock has considerable shrinkage, it can be allowed for in cutting length. The stock then runs off the end of the conveyer in a loop and over the entering roll of the tread cutter. The measuring apron carries the stock down and through a pair of knives or shears on an angle of 40 degrees. When the stock has reached the predetermined length it stops, the knives automatically drop, and the cut is made on a 45 degree skive. The difference in angle of cut and angle of stock is due to the compression of the soft stock under the knife action.

When the cut is made the treads move forward so as to separate the ends from the following treads by four inches. After the cut is made, the forward end of the following tread is lifted on rollers above the lower knife, so that it runs freely onto the conveyer until it stops for cutting. The length adjustments are made with a setting crank, and the machine can be changed from one length to another in a few moments. These machines must be driven by a variable speed device or variable speed motor with at least three to one speed range in order to operate the machine at any speed the calender or tuber may deliver to it. The power required is 2 hp. on 20-inch machine; 3 hp. on 30-inch machine and 40-inch machine, and 5 hp. on 60-inch machines.

These machines operate in front of 20-inch tread calenders and make ten cuts per minute, or in double row this is twenty treads per minute. Three men operate the entire unit of warmer, calender, cooling, weighing, automatic measuring, and booking cut treads, which means a very low unit labor cost. In other installations two 40-inch machines operate in front of calenders and make twelve cuts per minute, giving 48 treads on a four-wide run.

A smaller machine for use on bias chafing strips and sidewalls is the chafing strip measuring and cutting machine, or rotary bias cutter, which accurately cuts and measures to set lengths. It is adjustable to any length from 64 to 96 inches, which brings it within the circumference range of all tire sizes. The cutting width of the machine is 14-inch, and the capacity approximately 40 cuts





Utility Manufacturing Co.

(A) Tire Tread Measuring and Cutting Machine. (B) Chafing Strip Measuring and Cutting Machine. (C) Flap Measuring, Cutting and Printing Machine. (D) Bead Measuring and Skive Cutting Machine

per minute. Two sets of clamps are provided to do the measuring and there is one cutting knife. The drums are adjustable, permitting adjustment from 64 to 96 inches. The stock can be taken from the conveyer belt in front of the calender or tuber, and passes over to the top of drums only and is fed out on the other side downward so it can be delivered directly on the belt again.

Clincher beads which are made from round tubed stock and fabric covered are cut to length before curing to fit the circular molds, and after curing to the proper length for building into the tire. The automatic measuring and skive-cutting machine accomplishes both operations, and is furnished with either shear or knife cut to suit particular stock to be cut. Measurement of beads within ¼-inch accuracy is possible, but they must be fed to the machine so that there is no pull on the stock, that is, there should be a loop in front of the machine. The machines are built to cut as many as five strands of bead at one time, thus taking care of the output of five covering machines. The five strands are all brought together and cut at once with a knife six inches wide. On the second revolution, the machine will make 30 cuts per minute in any length from 18 inches to 288 inches.

The manufacture of flaps has become so economical a process on a volume basis that the small tire manufacturers no longer find it profitable to make their own, and are supplied by flap manufacturers. Several of the large tire manufacturers market flaps commercially to their competitors, notably Goodyear and Kelly-Springfield. The reason for this is that the small tire manufacturer does not have volume enough to pay for the installation of the modern automatic machinery necessary to make flaps efficiently.

One of the newer machines employed extensively in flap making is a flap measuring, cutting, and printing machine. This machine automatically measures flaps with a recording device, that has a range covering all standard flap lengths, cutting to any length desired within the standard range. The ends are cut round with dies, which are made of Ketos steel and have a range large enough to cut the widest flap, so that no changing of dies is necessary. The holes are also cut with dies, the round and oblong insertions being blanked out at the same operation.

Flaps are taken from the curing drums and fed through the machine without rehandling. A branding device puts the company name, size of flap, etc., on the flap. These branders are electrically heated, the elements being cast into a solid piece of bronze. The name and size plates are interchangeable.

The flap cutters are built in one, two, and three line types. The cutting operation is from 20 to 30 cuts per minute, giving a production of 60 to 90 flaps per minute on the three line machine; 40 to 60 flaps on the two line machine; and 20 to 30 flaps per minute on the single line machine.

Cutting cord fabric on the bias for casings is an operation that calls for 100 per cent accuracy, as overcutting means excess fabric and gum waste at the building machine, and under cutting renders the strips unfit for use on the size of tire for which it was cut. Years ago they were cut by hand with a bar and knife, until the bias cutter was invented. These are made in two types, the Spadone vertical bias cutter and the Birmingham horizontal cutter. While these machines have worked out very satisfactorily and are widely used, the large tire manufacturers have invented many improved types which afford greater speed and more accurate cutting in that the human element of setting the width is eliminated.

The type of bias cutter known as the Messer is a horizontal machine, and designed to accomplish the following objects: (1) reduction of friction waste; (2) securing uniform distribution of the cords in the plies; (3) saving labor; (4) cutting each ply to individual and accurate size; (5) cutting several plies of different selected widths; (6) printing an identification mark on each ply simultaneously with the cutting operation.

The machine comprises a large pipe drum positively driven at a fixed surface speed which corresponds to that of an endless link chain travelling across the machine and under the drum. At intervals on this chain are fixed freely turning circular cutters or a rotary bronze marking wheel.

As the fabric passes through the machine it is compressed against the upper roll by two small rollers which hold it against the drum and prevent side movement as the cutters advance across the web. As the sticky plies emerge from the cutting line they are detached from the drum by fine jets of air forced through a blade extending across the machine. The bias strips fall on a conveyer and the speed of operation is only limited by the facilities for removal of the plies. The most notable feature of the Messer machine is the marking device which gives the tire builder a center line to guide placing the plies, thus making for more uniform and better tires.

A review of some of the patents taken out since 1923 for improvements in bias fabric cutting reveals wide progress in this field.

A stock cutting apparatus[1] has a flexible element consisting of a taut wire arranged under a grooved pressure wheel. The latter traverses the length of a guide bar without wrinkling a sheet of thin rubberized fabric passing over the wire. The fabric is fed under the cutting wire by reciprocating pieces provided with suitably inclined fine bristles which advance the goods smoothly.

Attacking the problem from another angle and bringing in the element of continuous production is a bias cutting machine,[2] which does the actual cutting at the calender where the cords are rubberized. In conjunction with the bottom roll of the calender a hollow roll is run, there being a system of spirally arranged wires attached upon its surface which can be heated by an electric current. When operated against a sheet of rubberized fabric these hot wires sever the fabric in bias lines, and the cut strips are received from the calender roll upon a conveyer and rolled up at a convenient distance with an intervening lining.

Another invention[3] for the same operation employs a spirally tracked roll. Rubberized sheet fabric is passed over a spirally tracked roll, through which tracks the cutting knives, set in blocks, are guided, severing the passing fabric into bias strips. Travel of the knife blocks is insured by an endless belt which returns them after each cut to the starting point for another.

Three patents[4] describe further improvements in rotary bias cutters and comprise an improved rotary cutter for rapid and accurate work wherein a metal strip or knife with several cutting edges may be used to bias cut rubberized fabrics. The knife is held accurately in place in a resilient mounting, with a device to prevent the rolling action against the knives from buckling them.

Another improved bias cutting machine[5] is designed for cutting fabric at an angle of 45 degrees or any other angle. It comprises a roller on the surface of which are secured a number of helical blades arranged at any desired angle. The fabric is led over this roller and pressed against it by one or more pressure devices so that it is severed in strips at the required angle.

Auxiliary units for winding up the liner and removing the cut stock from bias cutting machines such as the Spadone and Birmingham have also aided in speeding up the process. A cutting machine liner unit[6] comprises a simple automatic and accurate mechanism for cutting sheet material into formed units, and in the case of rubberized fabric and a cloth liner, providing means for guiding, tensioning, and rewinding the liner. The stock is advanced intermittently at uniform tension, and cut into units while the liner is advanced at uniform tension.

Another patent[7] combines a practical form of apparatus adapted for reeling up end to end strips of bias fabric without distortion as they are severed by the machine. This eliminates the hand labor of booking after the fabric is cut.

The question of removing the stock after cutting is solved in

[1] United States patent No. 1,469,342.
[2] United States patent No. 1,499,676.
[3] United States patent No. 1,500,632.
[4] United States patents No. 1,577,619; 1,577,620; 1,577,621.
[5] United States patent No. 1,580,916.
[6] United States patent No. 1,505,425.
[7] United States patent No. 1,506,428.

another manner by a feeding apparatus for cutting machines.[8] This has as its chief object the avoidance of interruption in the operation of a bias stock cutting machine when removing and replacing the stock rolls and to avoid the necessity of an operator for controlling the supply of material to the stock loop. Two stock rolls are provided so that as the material is fully unwound from one stock roll the material from the other can be used to continue the supply. The stock rolls are so supported as to permit an empty one to be removed while the material is being unwound from the other roll.

In making up cord pockets for balloon and high pressure tires, bias strips of two widths are rolled together to form the two-ply units, which in multiples make up the required number of ply in the tire. It is an advantage then to have two widths coming from the bias machine alternatively and consecutively. This feature is taken care of by a bias cutting machine attachment.[9] This, by means of a combination of mechanisms, applicable to either horizontal or vertical bias cutters, provides for the cutting of wide and narrow strips in alternation.

Continual operation of the bias cutter is enhanced by the Spadone double lining stripper. It is so arranged that a roll of fabric can be hung in place for stripping while the machine is in operation, ready to follow the roll which is being cut. In this way the necessity is avoided of stopping the bias cutter for changing stock or removing linings and empty shells.

A conveyer for removal of the cut fabric is employed in connection with a bias cutter.[10] A strip of rubber coated fabric is received on the table, and the floating pulleys of the conveyer act through cables to simultaneously pick up the strip and advance it on the belt conveyer. Further operation of the conveyer causes reverse movement of the pulleys and thereby carries away the strip.

Automatic cutting in the production of inner tubes does not assume the major importance that it does in tires, but what cutting operations are necessary should not be neglected. If the stock is calendered as it is in most of the larger factories, time and stock can be saved in the tube making room by cutting to length as the stock is run. A machine of the tread cutter type or similarly operated can be employed here. After the tubes are cured, the next cutting operation is skiving the ends which is done on the ordinary type of tubular skiver at one operation.

Cutting out the tube patch and assembling the three parts together is ordinarily done on a clicking machine, about 20 ply of stock with separator paper being used. There is no question that the clicking machine method is the most economical for cutting out these parts as it enables the operator to see and plan his work so that he can interfit the dies to the best advantage. The usual method is to cut a straight row of oval patches with the die placed vertically from the operator, and then stagger the next row so that the lower part interfits in the openings on the row below. By cutting in this way, no more than 15 per cent scrap can be obtained, and a good operator will do better.

Good practice occasionally sanctions higher waste percentages for greater speed and efficiency when the loss from one is more than offset by the other. This is the case with a press for making tube patches. The stock is put up in three rolls to accommodate the three sizes of patch, and the press automatically cuts by die the patches simultaneously, then assembles, and presses them together discharging a completed patch at each stroke at the rate of 30 to 40 a minute. Despite the excessive scrap over the clicker method, the large manufacturer can use this machine to good advantage.

Thus it can be seen that the rubber machinery manufacturers as well as the big tire companies have made rapid strides in the development of automatic cutting, and from time to time, newer and better machines are being introduced which make for still greater efficiency in this important field of tire and tube manufacturing.

[8] United States patent No. 1,567,499.
[9] United States patent No. 1,512,655.
[10] United States patent No. 1,586,756.

Rubber Shock Absorber for Airplanes

The new Buhl-Verville "Airster," an airplane designed for strictly commercial service, embodies a number of characteristic features. One of these relates to a departure in the design of the shock absorbers which gives remarkable flexibility while landing and taxiing. This is a most important matter since it facilitates the comfort of the pilot and passengers when the machine reaches the ground at the alighting speed of 40 miles an hour.

In the customary design the fusilage is supported on braced framing guarded against the shocks of landing by absorbers of pure gum which act under tension. In the "Airster" the design of the landing gear is radically different. The airplane structure

Buhl-Verville Compression Shock Absorber

is supported over the wheels by a pair of telescoping vertical struts. Each strut is fitted with a shock absorber using rubber in compression. The details of the construction are as follows: The upper end of the smaller tube is attached to the airplane structure by a hinged joint. The lower end of the larger tube is attached to the axle by a double pin universal joint, which allows for axle deflection. The adjacent ends of the telescoping tubes are each fitted with a collar which serves as guide and prevents the tubes from separating under no load. The upper ends of each tube are fitted with a head, cast of a light alloy. Between these heads, thick walled rubber cylinders are placed, encircling the smaller telescoping tube. These rubber cylinders are separated by alloy metal disks which stabilize the pile and assist in evenly distributing the load to the rubber.

The dimensions of the rubber cylinders are so proportioned that under maximum load the rubber deflects over seventy-one per cent with a unit stress of 1,250 pounds per square inch of original cross section. That is the maximum safe allowable unit stress for this material. A compression rubber shock absorber giving 50 per cent deflection at maximum load is considered good design, therefore this one rates very high. The compression type of shock absorber offers distinct practical advantages over the tension type. Of these advantages special mention should be made of the more important which are most successfully attained in the Buhl-Verville design. The rubber in compression gains from 400 to 800 per cent longer life and shows greater hysteresis value which reduces the tendency to rebound. Under light loads there is greater deflection which allows the machine to taxi smoother in landing. Long storage or overloading in service have only minor deteriorating effect, which can be practically eliminated by the use of anti-oxidants according to the latest compounding practice. In this particular design there is no possibility for the rubber to suddenly fail to support the load and this is an inherent safety factor.

Comparative Resilience of Leather and Rubber Heels

By A. F. Shore

AN article comparing the resilience of leather with rubber heels was published several months ago in a well-known journal.[1] The author's conclusion that leather heels are more resilient than those of rubber in general will hardly gain the concurrence of engineers of test for it can be shown that this subject is too complex and involves factors that are not recognized by the simple form of test reported.

The testing apparatus described in the article comprised a smooth maple block in the top surface of which is fixed a metal rod having adjustable brackets with clamps supporting a graduated glass tube open at each end. A brass rod 1 cm. in diameter by 8 cm. long serves as a plunger to drop through the tube on the sample under test. In making a measurement, a piece of leather or rubber is placed on the block under the tube and the plunger allowed to drop on it from the height of exactly 600 mm. The height of the rebound of the plunger, and averaged from several drops on different spots of the sample, is taken as the measure of its resiliency and is expressed in percentage of the drop. Of the tests reported only one make of rubber heels showed resilence comparable with oak tanned rubber.

The author of the present article published some results of his researches[2] made ten years ago in which it was demonstrated that balls of rubber and a number of other organic substances, including leather, when dropped from a height 20 times their diameter, which in the test instance was ¾-inch, would yield a definite rebound. This was found to agree with remarkable precision with the rebound indicated by the scleroscope using a special broad tipped hammer 5/64-inch in diameter. The round number 100 on the scleroscope scale occupies a position of 65 per cent of the total drop and the same position was located at 100 on the scale of the ball dropping device.

The rebound test alone, however, is not a pertinent one for selecting heel or sole materials because of the large difference in the time factor that enters. The drop test can be utilized, for example, for the measurement of hardness in perfect solids such as metals by first overcoming the elastic resistance. When it is applied to porous and far more elastic substances as rubber and leather, it will serve to measure rebound elasticity under rather widely different conditions. An analysis of the drop and rebound test shows that when the weight is raised there is stored in it, by virtue of gravity opposed, a certain amount of potential energy. When it is dropped this is converted into energy of motion or kinetic energy. The tendency of this form of energy to be indestructible is very strong in the drop test, for the rebound is nothing but a manifestation of its persistence after the work and friction losses have been subtracted. The intensity of the blow of impact would be the product of dividing the striking energy of the mass by the amount of penetration or deformation. The reason why this form of test alone is pertinent to the selection of shoe heel material is because the rebound does not depend upon the intensity of the blow of impact so much as it does upon the conservation of the initial kinetic energy after it has struck the blow. As an example, the rebound test will show a value as high or higher for hard rubber than it will show upon the most elastic soft rubber obtainable. In the first instance there is but the slightest degree of penetration with a correspondingly high intensity of the impact blow, while in the second, there is a great deal of penetration and a correspondingly small degree of intensity of the impact blow.

The effect on the rebound, for the reasons cited, may be substantially the same. To obtain any rebound at all a certain amount of striking velocity is necessary, which is far greater than is found in the movements of the foot in the act of walking. The weight or pressure per unit of area in walking may be the same or greater than that in the soft material subjected to the rebound test, although the time of application is much longer. Thus substantially no rebound occurs but merely a gentle recovery of the material as on the order of a spring. This clearly argues in favor of a pliable material as most suitable for absorbing shocks transmitted to the human frame by walking upon floors.

It can not be denied that if a heel were made of a comparatively hard material as hard rubber or leather and a heavy person walked across a floor built of slightly yieldable beams, the effect of his steps on the building and other persons in the building, except for the noise, would be lighter than if he wore soft rubber heels. This is a manifestation of the entrance of the time factor.

Another way to demonstrate this principle is to take a ball of hard rubber or leather weighing, for example 10 pounds, and drop it on the floor from the same height as another ball made of the same weight of soft rubber. It will be found that the weight made of the softer material will shake the building far more than that made of the harder material. The reason for this is simply that the harder material yielding less, strikes a more intense blow and resulting vibrations are short and also comparatively local. In other words, the hard ball does not get time enough to communicate the vibration wave a great distance, while the softer material taking more time to deform has time enough to set up a shock wave, which may go a much greater distance and obviously would also have greater transverse latitude.

Reasoning along these lines it is evident that to produce a correct shock absorbing heel for such a commonplace thing as a shoe, technique, no less exacting than that which enters into the design of a motor vehicle provided with springs and tires, may be in order. Experience has shown in this branch of engineering that while a stiff spring may be too hard on the passenger a very soft spring does not necessarily make for easier riding. On the contrary, the strength of the spring must be very definitely proportioned, not only to the weight of the chassis and the average load on it, but must also take into account the cushion effect of the tires. This is a delicate problem for automotive engineers.

It is evident that a heel can be too hard and it can be too soft to facilitate the most comfortable walking. Naturally compensations can be made. For example, if a rather soft rubber is used it may have to be thinner than if a harder grade of rubber is used. Whatever the thickness selected it is evident that the hardness and elasticity factors thereafter must be as nearly constant as possible. In some samples of average grade heels that have performed well in service, the following values have been found: Hardness (durometer), 60; elasticity (elastometer), 65 to 70; scleroscope, 65. Inferior grade heels show a hardness somewhat higher, and elastometer and scleroscope values correspondingly lower. Heels of this material, while softer than leather, wear very rapidly. Rubber heels of superior quality have shown a hardness of from 70 to 75 (durometer) and elasticity of 75 to 80 (elastometer) and 75 (scleroscope). The durometer hardness of leather averages 95 with an elastometer value 5 to 10 degrees.

Experience has shown that the wear resisting qualities of rubber heels and vehicle tires, particularly solid tire treads, are indicated by multiplying the hardness values by the elasticity values. It is understood, however, that the hardness must be suitable to resist the load strains. In solid tire practice, therefore, the highest hardness consistent with high elasticity must be provided.

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[1] *Journal American Leather Chemists' Association*, December, 1925, pp. 576-579.

[2] "Scleroscope and Ball Rebound." *The India Rubber World*, March, 1917, p. 328.

The Continuous Vulcanization of Tire Casings

CONTINUOUS production is today more than a theory in tire manufacturing. Rapid progress has been made in eliminating the idle machine time and extra handling as the raw materials pass from process to process into the finished state. In many cases these improvements have been made without undue expense or extensive engineering. It is natural that the results easiest to accomplish would be the first to be gained. Along other lines, however, notably those such as curing where the investment in machinery is heavy, the changing trend has been slower to materialize.

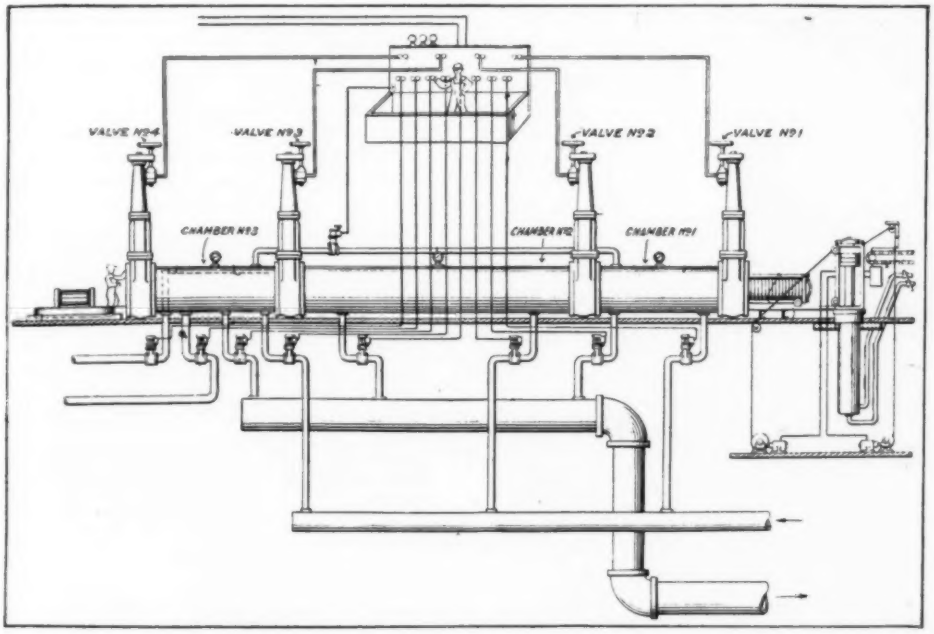
It is obvious and has been for some time that the present method of vulcanizing tires must be improved to meet the insistent demand for greater production and lower costs. The vertical type vulcanizer holds about 25 to 40 tire molds. The loading is accomplished by raising the ram to the level of the conveyer from which the molds are placed, one by one, into the heater until it is filled. Then the cover is closed and locked, the hydraulic pressure applied and the steam turned on to effect the required vulcanization. When the cure has been completed the vulcanizer is opened and a similar amount of time consumed in unloading. The time required for loading and unloading a heater in many cases is more than the actual curing period itself, despite modern methods for expediting this process. Figured into lost machine time for units as expensive as vulcanizers, this is a serious overhead charge.

Within the last two years the watch case vulcanizer has been perfected and has proved to be a big cost reducer, particularly for the small manufacturer on account of its accessibility to the builder, less steam and water consumed, and its adaptability to changes of mold design. It has been particularly useful in taking care of balloon tire sizes which are not widely sold, but is not a continuous proposition in the fullest sense. With one man operating a battery of ten of them, however, the change time is materially reduced over that of the vertical hydraulic vulcanizer.

The accompanying diagram shows a horizontal tire vulcanizer which is continuous in the fullest sense of the word, and once started in operation produces a heat of tires every fifteen minutes without interruption. This recently invented heater embodies all the features necessary to insure curing of tires continuously.

Molds are delivered from a conveyer to a hydraulic ram similar to that of a vertical heater and a nest of 40 made up for a unit heat. This unit which is really a truck on end is then locked and changed from the vertical position to the horizontal by means of an automatic device. The car then gravitates into Chamber No. 1 of the heater by a push button control. The operator then opens No. 2 valve to admit steam into Chamber No. 1 for a set-up cure of 15 minutes at 20 pounds steam.

At the end of 15 minutes, the valve is further opened to raise the steam to 60 pounds pressure, the curing temperature. Previous to this, the operator has raised the steam pressure in Chamber No. 2 to 60 pounds. With the opening of No. 2 valve the car gravitates into Chamber No. 2, and another car follows into Chamber No. 1. This is done three times. When 45 minutes have elapsed, steam having been raised to 60 pounds in Chamber No. 3, Valve No. 3 is opened and the first car moves into this compartment.



Dykes Continuous Process for Vulcanizing Tires

When an hour has elapsed, the curing time, steam is by-passed from Chamber No. 3 to Chamber No. 1 where there is a car waiting to be warmed up with 30 pounds steam. The balance of the steam in Chamber No. 3 is then exhausted, and cold water turned on for cooling. With this accomplished, the water is run off, Valve No. 4 opened, and 40 cured tires emerge from the heater.

The car then runs on to a tipping device which returns the molds to vertical position, the molds are opened, the tires removed and the molds returned with the truck to be refilled for successive heats. Thus every fifteen minutes, 40 tires are produced and vulcanized, making 160 tires an hour, or 3,840 casings a 24-

hour day as the maximum capacity of the vulcanizer. From this it can be deduced that ten of these units would vulcanize all the tires produced in the biggest single tire factory in a day.

Chambers No. 1 and No. 3 are really auxiliary chambers for operation in conjunction with No. 2 where constant high pressure for vulcanizing is maintained. The old vertical system consumes from 15 to 30 minutes in opening and closing, filling, and warming up before a cure is attained. These operations require a sizeable crew of men, whereas in the continuous heater labor savings are possible together with increased machine efficiency. In fact, most continuous processes can be operated with much less personnel along with machine time savings.

This heater is also adaptable for tubes, employing hot water instead of steam. The cars would be jacketed in this instance for uniform results. The first and third chambers would alternate with full capacity of water to start the cure.

It is estimated that the continuous tire heater will replace 30 vertical heaters, calling for an investment of $210,000, at one third of this cost. For a tire manufacturer starting operations on a sizeable scale today, the continuous system calls for serious consideration. For the large plants now in operation and equipped with vertical heaters, a change in equipment such as this naturally involves an investment which can only be absorbed as depreciation and reserve accounts permit.

But it is perfectly sane to predict that the cost of vulcanizing tires and other rubber articles is in line to be reduced materially by the introduction of methods along the line of the continuous production idea.

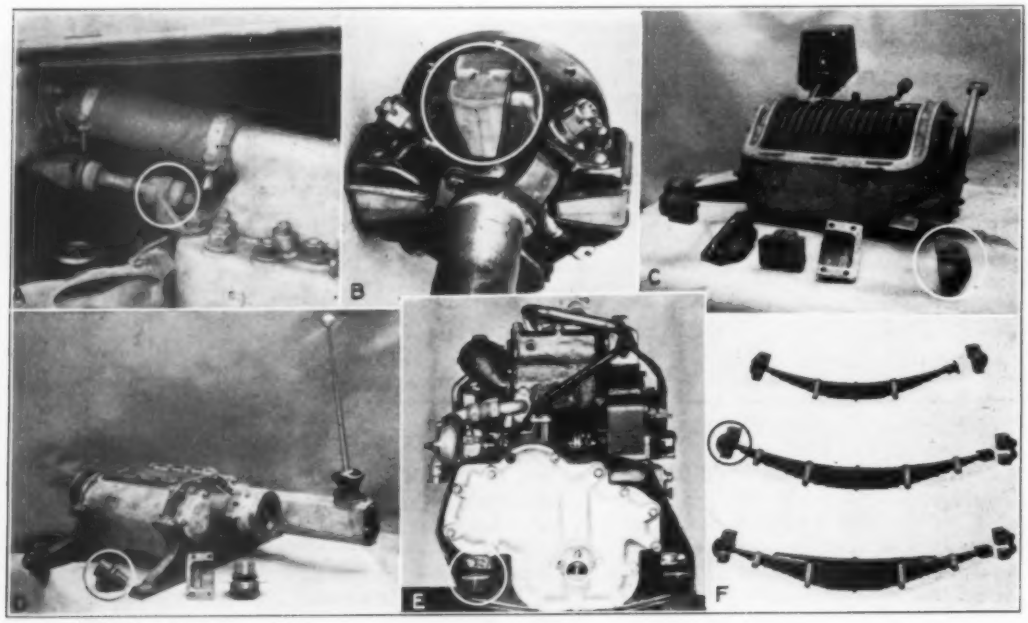
Rubber in Motor Vehicle Chassis

Rubber Shock Insulation and Suspension for Automobile Chassis Bodies, Engines, Radiators, Brake Units, Transmission and Steering Post

IT is a fact that 80 per cent of the annual consumption of rubber is used in the manufacture of tires and inner tubes for cushioning the road shock of the vehicles. This fact alone is justification for the statement that the shock absorbing or resilient property of vulcanized rubber is its most valuable property upon which depends the practical utility of its many thousands of applications in modern life.

Passing over the cushioning effect of rubber tires and tubes, the developments in motor vehicles each year reveal new applications of rubber for the comfort of the driver and passenger, as well as for lessening shocks to the chassis, body, engine and transmission. The popularity of buses has greatly increased their use and emphasized the need of their improvement for ease and comfort of riding. This is desirable in buses for city passenger service and becomes specially important in the case of long distance service. Somewhat less urgent, yet none the less desirable, is the application of rubber shock absorbers to protect the engine and driving gear from damage by vibrations.

The insulation of shocks and vibrations at their source not only preserves the life of the vehicle, making driving and riding easier but it affords silence and freedom from the annoyance of irritating squeaks and rattles. Elimination of squeaking due to friction between the body and chassis is commonly effected by strips of asphaltum soaked cotton duck which cushion the body and chassis. A new material for this purpose is now being used. It consists of a special composition of rubber and cork coated on duck. The layer of rubber and cork combination serves the double purpose of cushion and silencer under the body.



(A) RUBBER RADIATOR INSULATING DISKS. (B) FOUR-POINT RUBBER TORQUE INSULATION. (C) FOUR-POINT RUBBER SUPPORT FOR BRAKE UNIT. (D) FOUR-POINT RUBBER TRANSMISSION MOUNTING. (E) FRONT VIEW RUBBER ENGINE SUPPORT. (F) RUBBER SPRING SHACKLES

International Motor Co.

Shocks and Vibrations of the 1927 Motor Vehicle Will Be Insulated at Their Source by Rubber Springs

Rubber Spring Shackles

Rubber spring shackles on the chassis between the sprung and unsprung weight were invented and patented a few years ago by one of the leading truck manufacturing companies.[1] Constant study and development have demonstrated the practical value of rubber suspension as applied in various forms in the chassis, to engine and brake unit suspensions, transmission, etc. The use of rubber as a spring shackle may be likened to the use of a wooden handle in a sledge hammer. The resilience of the wood absorbs the vibrations caused by the heavy impact of the hammer and insulates these from the frame of the man striking the blow. If the hammer handle were an iron bar instead of wood the shock of the impact would be transmitted in full to the striker and fracture his wrists. In this figure the unsprung weight is the hammer, and the rubber shackle is the yielding connection of the spring.

Rubber shackles have various forms according to their point of attachment. Practically all are molded from resilient rubber composition although in one system laminated duck and rubber is used. However the details of form, construction and application may vary, the advantages of using rubber cushioning are readily apparent in service. Reference to the illustration will show at what points rubber cushioning is employed in a modern motor vehicle. The ends of each spring are supported in suitable molded rubber blocks encased under compression. The fact that spring shackes give longer service when the rubber works under compression was discovered by experience. The ordinary shackle rubber is mounted compressed 3/16 of an inch. The result is that wear is so reduced that the rubber will last over 200,000 miles of service before requiring replacement. It practically outlasts the life of the vehicle. Other advantages of the rubber spring shackle block is that half the cost of spring assembly is saved—the pliability of the block allows for all inaccuracies of workmanship, and in service the block will take care of 15 degrees of spiral twist.

Cushioned Engine Support

Special molded forms of rubber are used to carry the engine on the chassis. The rubber blocks surround the ends of the supporting lugs of the engine which is thus insulated from shocks. The practical protection to the mechanism which results insures greater durability of the parts.

Torque Rubbers

Torque rubbers are blocks molded with a groove in each side. They are applied back of the coupling of the transmission shaft of the engine spaced on quadrants of a circle. This four point rubber contact effectually takes up the torque or twist of the shaft besides absorbing vibrations.

Top Radiator Support

The connection between the top of the radiator and the engine is made by a telescoping threaded bolt which carries at either end two cylindrical rubber buffers. These are held in compression against supporting cast brackets attached respectively to the radiator and the engine. In this way all vibrations from front to rear are cut off from the radiator, thus obviating leakages and at the same time taking all strain from the radiator hose connection.

Brake Unit Insulation

The brake unit on heavy trucks is now mounted in four rubber spring blocks essentially as described in the case of the engine.

Cushioned Steering Post and Wheel

Vibrations that reach the driver via the steering post and steering wheel are particularly trying to the operator on long runs. He is relieved from these by the interposition of a rubber insulation in the post and by the use of a resilient rubber covered steering wheel. Mention should also be made of rubber mounting of the dash for protection of the gages, etc.

[1] International Motor Corporation, New York.

Rubber Suspension for Bus Chairs

The uncomfortable and insecure seating afforded by the chairs used at present in passenger buses will ultimately be replaced by the use of rubber cushions arranged to take up vibrations and swaying in all directions. Various schemes have been tried and abandoned. Some of these utilized braided elastic pure gum cord, somewhat similar to that used as shock absorbers in the landing gear of airplanes, but without complete satisfaction. In a recent improved arrangement molded rubber is used under compression in the form of short hollow cylinders combined with flat rubber plates. This arrangement affords front and rear suspension of a metal support or platform upon which rests the spring upholstered seat.

The combination in one chassis of rubber linkages at all the points mentioned results in perfect quiet and ease of riding for the driver and passenger, less breakage of fragile loads and longer life for the entire equipment.

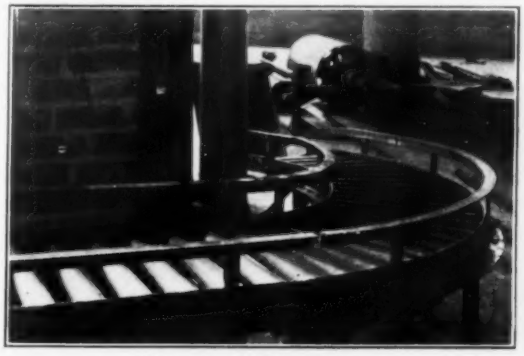
Conveyers for Loading Tires and Tubes

The new Firestone warehouse at Akron is connected by bridges to Plant I, and is equipped for mechanically moving tires and tubes direct to freight cars for shipment. The illustration shows a new application of a spiral conveyer which is built of sheet metal. It is a two-way system which permits loading at any floor for final delivery to freight cars on right and left tracks. Extension roller conveyers carry the tires into the cars.

Gravity Spiral Conveyer

A gravity roller conveyer, also illustrated, carries cartoned tubes from the packing room to the warehouse or shipping department.

The complete system comprises a spiral conveyer dropping the tubes from packers to the floor below where rollers carry them across a bridge between buildings. Here a second spiral and roller combination carries the tubes on to the warehouse or shipping floor. By this system continuous movement of goods can be maintained without assistance of manual help and at minimum cost since the power is gravity.



Extension Roller Conveyer

No More "Perishing" of Rubberware

Rubber Tires, Inner Tubes, Elastic Fabrics, Footwear, Clothing, Insulated Wire, Druggists' Sundries, and Sporting Goods Protected from Deterioration

THOUSANDS of dollars are lost annually by manufacturers, dealers, and users of rubberware because the best of goods perish. Dealers are constantly instructed how to store goods and what to do to preserve them, but with only partial success. In the last fifty years the attempts to add life and to prevent hardening, cracking and general deterioration have been numberless.

There is, for example, the oft-repeated caution to keep vulcanized rubber goods in a cool, dark place, away from warm currents of dry air, and free from contact with oil or grease. It has been long known how much faster rubber boots and shoes age in light than in darkness. The more sensitive druggists' sundries have been kept under water and in air-tight receptacles containing vessels from which benzine has been allowed to evaporate slowly. Goods have also been dipped in paraffin melted at 212 degrees F. to retard oxidation, and also treated with carbolic acid.

Use has been made, too, of petroleum, benzol, aniline, pyridine, etc., to prolong the life of rubber and regain elasticity, but when these substances dried out the degeneration of the rubber proceeded even faster than before. Naphthaline, the familiar moth ball material, has also been used to enhance the durability of rubber. Another process advises the use of the peroxides of lead and manganese, with black oxide of copper, to decompose ozone into the less active form of oxygen. For storing goods in the tropics receptacles filled with nitrogen, hydrogen, methane, or carbonic acid gas have been recommended. One composition for giving more life to rubber was made of a saturated solution of camphor in turpentine with an equal amount of linseed oil. Another had soda ash, 95 parts, and carbonate of ammonia, 5 parts, dissolved in hot water; while in another process decayed rubber goods were immersed for a long time in boiling water, containing tartar emetic, and to which tannic acid and calcium sulphite were afterward added. In one short-lived business tires were rejuvenated by boiling them in common ammonia solution and rubbing them with kerosene.

A recent surface treatment that is fairly successful consists of oxidizing surfaces to prevent oxidation of the articles themselves. Thus, when a surface is washed with an alcoholic solution of chloride of copper the copper salt develops a protective layer, leaving the under part safeguarded yet unaffected. It is remarked that when the solution is applied to rubber compounds containing zinc oxide the effect is even more marked, the zinc oxide promoting the formation of copper oxide, one of the best ozone reducing agents. This is, however, a palliative and is not getting at the root of the trouble.

It is only recently, therefore, that the problem has really been tackled from a purely scientific standpoint and successfully solved. Curiously enough, the great rubber laboratories and experimental plants that have succeeded in raising tire mileage from 1,500 to 20,000 miles and more are the ones that not only first made "imperishable" goods but have given to the world the chemicals necessary to such accomplishment.

The beginning came when a definite effort was made to determine the cause of deterioration. In every case oxygen was found to be the foe. Just as iron oxidizes and perishes, so too, does rubber. To be sure, through painting and plating an iron surface the rapid reduction to oxide or rust is easily thwarted. Similarly various protective coatings have been tried on rubber goods, but owing to the flexing and stretching which they undergo, they have until very recently proved unsatisfactory.

According to German chemists, when the sulphur used in vulcanizing is set free it forms sulphur dioxide and this in turn unites with atmospheric oxygen and produces sulphuric acid. The latter has been found in old vulcanized rubber goods and its presence, even in small amount, is regarded not only as an indicator but also a quickener of decomposition.

In aging tests it has been found that pure gum products age much sooner than compounded rubber materials. The explanation given for this is that in the pure gum goods carrying only sulphur sufficient to vulcanize the rubber there is no protective ingredient which might either check the production of sulphur dioxide or which by having a greater affinity than rubber for oxygen would absorb the latter and thus spare the rubber. It has been found that to reach an advanced state of deterioration only 1 per cent of oxygen need be absorbed, as based on the rubber volume.

In the new art of producing rustless iron and steel the wisdom of discarding palliatives and treating troubles where they originate is well illustrated. Metallurgists, being dissatisfied with the results obtained through the outward application of anti-oxidants to iron and steel, finally tried them from within, getting marked benefit by incorporating in the molten mass, first, about 25 per cent of copper, next some 15 per cent of silicon, and latterly 12 to 14 per cent of chromium. The discovery marks an epoch in the history of a great basic industry.

Quite similarly the rubber industry has adopted a radical treatment of its raw materials in order that its products may be oxygen-resistant, or rust proof. Progressive rubber manufacturers now add to their mixes new chemical compounds which specifically inhibit the deteriorating effect of oxygen.

Such substances are called anti-oxidants, antoxygens, antoxidizers, stabilizers, inhibitors, preservatives, etc. These retarding agents are said to act like negative catalysts. Notable among the more effective are Age-Rite, in which acetadol is said to be combined with alphanaphthylamine in equimolecular proportions; V G B, described as a reaction product of acetaldehyde and aniline; and Antox, the formula of which is not so well known.

In rubber, it appears, there are unstable carbon atoms, so-called ethyl groups or linkages, which become easily saturated in the presence of oxygen, soon forming peroxides; but the timely application of a suitable inhibitor will easily check such absorption. Being basic, it will unite with the acids produced by oxidation, neutralizing them and preventing harmful action on the rubber, suggesting the manner in which ammonia operates in preserving rubber latex.

The employment of such age-resisters is now sound, scientific practice. Capable of easy control, they have also removed much of the guesswork from rubber manufacturing. Effective in the heaviest soft rubber goods, they are equally serviceable for the lightest and finest products, and do not impair the most delicate colors. They are used in small quantities, from one-half to one per cent.

If buyers want goods that will last, it is incumbent upon them to discriminate carefully in purchasing. The gyp will offer age-proof goods although he may never use an anti-oxidant in making them; while the honest rubber manufacturer, like the reliable producer of slow burning materials who repudiates the term "fire proof," will offer long life goods in which are incorporated the best of anti-oxidants.

It has been suggested that buyers in encouraging the extensive use of anti-oxidants in the rubber industry can also do a great deal toward conserving both labor and natural resources, and that they may be helping to make rubber goods last much longer, lessen the demand for raw material and do much toward keeping the price of crude rubber within reasonable bounds.

Packing Plantation Rubber for Export

A Review of the Different Packing Methods

The preparation of plantation rubber for shipment has ever been a major consideration with the majority of Far Eastern rubber exporters. Criticism has always been leveled at the wild product of Brazil and Africa because the natives prepared their rubber in a very careless fashion. Stones, pieces of wood, dirt and so on, form a high percentage of the weight of these native rubbers. But from the very beginning plantation rubber has been prepared clean and estates have vied with one another to put on the market a 100 per cent pure rubber ready for the mixers. For they realized that careful preparation and packing of their product could make all the difference between profit and loss. In this connection must be mentioned the practice of rubber brokers in judging the quality of rubber put on the market.

Condition on Arrival of a Poorly Packed Plantation Rubber Shipment

All through the Far East is heard the grumbling and complaints of rubber estate managers over the methods of the Singapore and other chambers of commerce in judging rubber by appearance only. Grades are arbitrarily put on the rubber by men using very unscientific tests. Satisfactory quality can only be proved by laboratory or manufacturing tests. It has been suggested in Malaya that estates submit samples to the newly established Research Institute and thus sell their product on a certified report basis. Such a procedure would do away with a lot of wasteful and useless "window trimming" in packing rubber and put greater emphasis on intrinsic quality. In this needed reform manufacturers can and ought to take greater interest even though it may be a little more expensive for them. In the end they would have certified quality and a standardized product.

Packing the Rubber

Every manager on European estates appreciates the importance of packing good quality, clean, uniform colored rubber in containers that will stand rough handling and long journeys. The packing is always done in a cool, clean, shaded room. Usually the windows are painted red or have red shades to screen off injurious actinic rays of the sun. Great care is taken to have in one container, crêpe free from all blemishes and of the same fine shade of color. With smoked sheet the same care is taken to remove bubbles, to cut out oil streaks carelessly caught from the rolling machine, and to keep out any "rusty" sheets. Yet all this unusual solicitude may come to naught and the estate innocently suffer when the rubber reaches the godowns or warehouses.

The rubber must be inspected and its quality judged from samples. The Committee on Standard Qualities takes samples which means the case, or whatever the container, must be opened, the rubber turned out, inspected, sampled and its weight checked up. It is in these godowns, managers claim, that splinters, dirt and moisture are accumulated.

Another complaint or alibi from estates is that their rubber, clean and uniform when leaving the plantation, is damaged in transit—cases made wet by spray on board jetties going to the freight ship, as when loading at Port Swettenham; and again at the ship's side where cases are hauled aboard ten or more at a time, squeezed between the holding ropes and then dropped and tumbled into the hot, dirty hold.

Innovations Slow

However these complaints and special viewpoints may be, the fact is that the packing of rubber can be improved. Many persons have studied the problem and have offered what they consider improved systems. Yet, in spite of numerous recommendations and the invention of other suitable methods, the majority of rubber estates in the Far East still export their rubber in wooden cases. An innovation since the war has been the collapsible canvas case, but its use is limited to local transport to and from Singapore.

The Wood Case—Venesta

Experience in the tea plantation industry was early taken advantage of by rubber planters in the use of Venesta cases for packing. A Venesta case is made of smooth, well planed wood and combines great strength with extreme lightness. Its popularity is well earned. The popular sizes are either 21 by 21 by 24 inches with a net capacity of 9,915 cubic inches having a capacity of 201 pounds per case; or the smaller size, 19 by 19 by 24 inches with a capacity of 164 pounds of crêpe to the case. The smaller size is equivalent to 5 cubic feet. Sheets average a net weight of 200 pounds to this smaller case; first latex crêpe about 150 lbs. Ten cases of rubber make up a ship ton, which is equivalent to 50 cubic feet.

The popularity of the Venesta case holds strongly in British Malaya. During the war, owing to lack of cargo space, it became a patriotic duty and necessary expedient to find ways and means of getting the essential crude rubber to Europe and America in the smallest cargo space. Baling, which our own War Department found so effective and economical, was put in effect at the Far Eastern port. A net saving of 25 per cent in cargo space and about 20 per cent in weight was realized. But baled rubber

never became popular. Manufacturers complained that the rubber seemed to suffer in quality and in most of the consignments sheets showed a tendency to stick together, making it very difficult and expensive to separate them. As soon as the war necessity passed, a marked return to the Venesta packing case took place.

It is well known that in transit an almost cubical case of the 5 cubic foot capacity as used is better able to withstand rough handling than oblong or larger cases. The three-ply Venesta cases with the grain crossing at right angles are shipped flat to the estate where they are easily put together. Metal straps bent around all the edges and riveted hold it securely. The inside is provided with battens at top and bottom for greater strength and rigidity. They can be easily opened at either end—a great advantage for inspection and sampling—and the battens come off as easily as the lid so that the rubber can quickly be turned out. Holes can be made in the sides for ventilation purposes. There is danger of rubber becoming moldy or spotted in an air-tight package, especially if there is any tendency toward tackiness at the time of packing.

The Momi Case

Another case used on many estates and particularly during the war when Venestas were hard to get is the Japanese Momi. To be satisfactory the Momi case must be made of well-seasoned wood of fully 5/8-inch thickness. Before shipment the added precaution must be taken of fastening the case securely around both end edges and around the middle, both end and crosswise with hoop iron. They are not as strong as Venesta cases.

In both the Venesta and Momi case method it seems strange that a simple precaution is not taken, such as lining the boxes with suitable paper or with crêpe or sheet strips to prevent contamination of the first grade rubber with dirt, dust and wood splinters from the cases themselves. This precaution is being followed in another system which will be described further along.

Most managers of course realize that wood chips, sawdust and splinters which might become imbedded in the rubber should be removed from cases before the rubber is put in. But they cannot be present all the time to supervise the packing. If the rubber were wrapped in suitable paper or rubber strips such dirt could never get to the high grade rubber. Heavy waxed paper has been used very successfully as a wrapper. All sorts of excuses are given why wax paper, cheese cloth, muslin and the like are not used, when the real fact of the matter is that dogged conservatism and the inertia of the Far East are opposed to any innovations.

All-Rubber Packing System

A novel method of packing evolved in the Malay States makes use of the lower grades of rubber. Hence the claim is made that the container after serving very usefully to protect the high grade rubber can be sold itself as scrap crêpe. This is the method: Sheets are made of the different scrap rubbers. These sheets are next pressed firmly together. Then a wooden block, covered with metal sheeting, of the size of an ordinary Venesta case is used as a frame around which the sheets are assembled and molded. The result is a rubber case which can be made to hold even more rubber than a wooden case of equal dimensions.

As with the wooden cases, the sheet or the crêpe is first put in the press and compressed into a body of 18 by 18 by 24 inches. This will consist of 225 pounds of sheet or 175 pounds of crêpe. Over this body of compressed rubber is slipped the prepared rubber case and the whole package is then reinforced and bound with metal strapping.

The advantages claimed for this system are that it is cheap, dust, dirt, splinter and rainproof, unbreakable, avoids heavy charges for reconditioning as must be met with wooden cases and finally the container itself can be sold as scrap rubber. The big objection to the method is that rubber arrives at its destination in a massed condition which makes it difficult to sample and costly to separate.

The Bale Case

The point always stressed with plantation rubber is that it should be clean enough so that it can be put directly into the mixers at the factory. Around this condition have been developed the several containers whose outstanding claim is that the rubber arrives at its destination clean and mold-proof. Venesta cases achieve this end very well but are expensive; Momi cases are not so efficient since dirt works in between the boards and the wood splinters easily inside from the friction of the rubber.

Another requisite in packing demands that the package be so constructed that the contents can easily and quickly be turned out for sampling, inspection and tareing. If the case has to be broken open to release the rubber it will have to be reconditioned at some expense. The warehouseman all over the world is not famous for gentleness. Cases are badly used up in transit. To meet these practical tests the Bale Case was put on the market. It is a collapsible canvas case, with a board top and bottom, and the boards are held together by four iron bolts. The effect is a canvas case of 5 cubic feet capacity which combines rigidity and strength of wooden cases with the ease of opening and handling of the canvas bales. The inventor claims that the bolts and boards prevent compression of the rubber in transit. The bolts being provided with nuts, the boards are easily removed, the canvas is quickly unlaced and turned down at the sides and ends and the contents can be inspected, sampled and tared. This done the package can then be quickly reassembled and shipped to its destination.

Packing in Mat Bales

This method of packing had its origin and has its greatest vogue in the Dutch Indies. The Dutch have had much experience in shipping tobacco and other tropical crops in so-called "tobacco mat" bales. This mat consists of a specially close-woven rush prepared in Borneo. This experience naturally led them to use mats for baling rubber. They have worked out a system and today can report considerable progress in its adoption on Dutch rubber estates.

Their method is simple. Crêpe or sheet are put in the press and compressed to a bale of 19 by 19 by 24 inches, or to a flat bale measuring 24 by 30 by 12 inches. The latter has worked out as most convenient and practical. This pressed block of rubber is then wrapped in strips of the same type of rubber as is in the bale. The bale is then encased in a "tobacco mat." The result is a very high class method of packing. The chief feature of this system is the wrapping of the bale with strips of the same rubber before the matting is put on. This same feature could with great advantage be adopted in Venesta and Momi chest packing. It is predicted that the Dutch method, as it has been recently perfected, will find greater and greater vogue throughout the Netherlands Indies and possibly in British Malaya.

Canvas Bag Packing

A patented canvas bag made its appearance in Singapore after the war. Like every other similar device it had its good points. It found great favor with a number of estates that shipped their rubber locally. The canvas bag could be used again about 100 times. Its utility for packing rubber destined for Europe or America has not seemed to be proven, though for local transport it has found many purchasers.

Some Additional Points in Packing

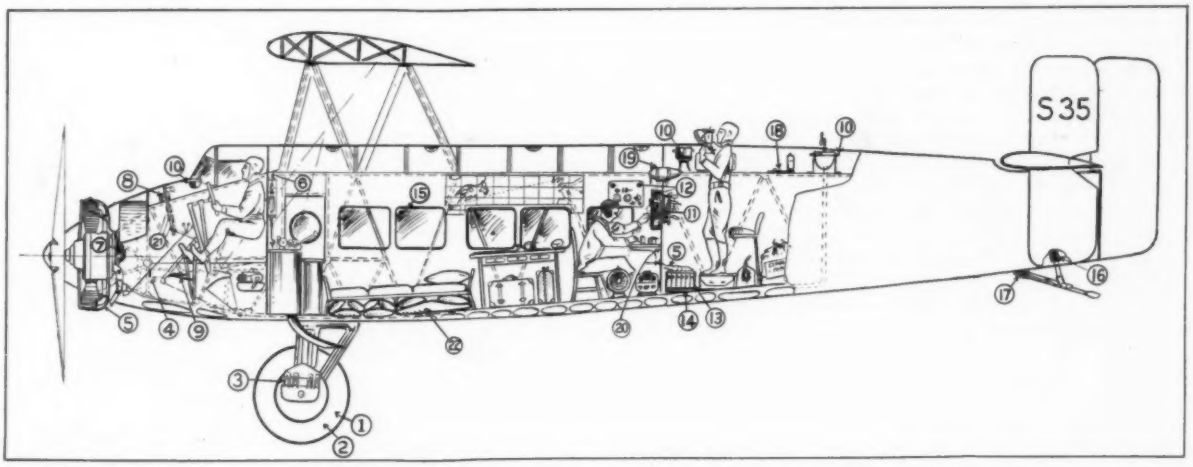
It is a good practice to line the container with waterproof paper or to wrap the rubber with strips or sheets of the same rubber before putting it in a case. This affords protection against moisture and moldiness and against dirt, splinters and nails.

Each estate must work out for itself just what system of packing is best suited to its market. Packing rubber for export is extremely important and deserves major attention from all managers and manufacturers.

Rubber in the Sikorsky Trans-Atlantic Airplane

THE great Sikorsky airplane which had been under construction and test for some months was designed especially for the air trip from New York to Paris. The course as charted was 3,633 miles and the estimated time of the air voyage from 36 to 40 hours or from 90 to 100 miles per hour. Had it been accomplished the trip would have been the longest non-stop flight on record but the S-35 was not to make it and now lies at Roosevelt field on Long Island a twisted mass of burned metal. Although the S-35 met disaster at the starting point its design and construction were most complete.

The plane was of gigantic proportions and power. Its wing spread was 101 feet and length of fuselage 45 feet. The driving power consisted of 3 Gnome-Rhone-Jupiter motors, each capable of delivering 425 horse power.



Applications of Rubber in Sikorsky Trans-Atlantic Air Plane S-35

(1) PNEUMATIC TIRE. (2) INNER TUBE. (3) LANDING GEAR SHOCK ABSORBER CORD. (4) GROMMETS IN FIRE WALL. (5) RUBBER INSULATED IGNITION, RADIO AND LIGHTING WIRE. (6) GASOLINE HOSE CONNECTIONS. (7) OIL HOSE CONNECTIONS. (8) AIR HOSE CONNECTIONS FOR AIR SPEED INDICATOR AND OTHER INSTRUMENTS (9) TENSION CORD ON RUBBER PEDALS. (10) SPONGE RUBBER CUSHIONS IN COMPASS MOUNTING. (11) SPONGE RUBBER CUSHIONS IN RADIO TUBE SOCKETS. (12) SPONGE RUBBER CUSHIONS IN RADIO SET MOUNTING. (13) STORAGE BATTERY RUBBER CASE. (14) RUBBER MATTING UNDER STORAGE BATTERY. (15) WATER TIGHT RUBBER CHANNEL AROUND ALL WINDOW FRAMES. (16) COMPRESSION DISK SHOCK ABSORBER ON TAIL SKID. (17) TENSION CORD SHOCK ABSORBER ON TAIL SKID. (18) SPONGE RUBBER CUSHIONS FOR CHRONOMETER. (19) SPONGE RUBBER CUSHIONS IN GENERATOR MOUNTING. (20) SPONGE RUBBER CUSHIONS IN RADIO OPERATORS' TABLE MOUNTING. (21) SPONGE RUBBER CUSHIONS IN INSTRUMENT BOARD. (22) FOLDING RUBBER LIFE BOATS.

The power generated was calculated to drive the machine through the air at the rate of 120 miles an hour. Under such power and speed an airship is a vibrating mass of metal. These continuous shocks would absolutely prevent operating, navigating and landing the plane were it not for the engineering applications of rubber at numerous critical points in the ship's construction and equipment. This is true of every airplane in the construction of which rubber is used in many ways. In the design of the Sikorsky plane practically all the usual airplane rubber fittings were used supplemented by numerous special applications of rubber necessitated by the unique design of the plane and the flight it was planned to make.

The function of most of the rubber found in the plane was to eliminate shock caused by landing, or to protect the many delicate indicating instruments or piping systems from vibrations. Electrical insulation and protection against leakage of acid, the exclusion of water, and life boat construction are some of the other functions.

The tires were regular construction airplane tires with heavy tubes necessary as the principal gear upon which the plane was to land and taxi in and out of the hangar.

Airplanes touch the ground at a sharp speed and owing to their great weight, pneumatic tires alone are not adequate to cushion the shock, consequently special shock absorbers are applied both at the wheels and at the tail skid. These are of two types, tension and compression. Both types were used in the Sikorsky plane. The tension type consisted of five-eighth inch bundles of pure rubber thread braided under tension with a covering of cotton yarn. It was applied by binding it as a connection between the axles and each wheel on both sides, or between the tail skid and the fusilage. The Sikorsky also had a supplementary tail skid shock absorber of the compression type. This was located within the fusilage and was actuated in compression by the movement of a telescoping tube jointed to the skid on the outside.

The partition between the engine and the pilot's cock-pit is known as the fire wall. In the S-35 the same general rubber parts were used here as in the usual airplane fire wall. Through this wall pass the gas tubing, lubricating oil tubing and all electric wiring. In order to protect these from leakage due to possible chafing, soft rubber grommets or grooved edge rings are sprung to place, thus providing a soft cushion around each tube or wire.

The necessity of rubber insulated wire for electrical connections requires no comment but the insulation of the oil and gas pipe lines from the danger of vibration should be noted. These vital supplies are conducted in copper pipes. Where connected to the engine, instruments, etc., these pipes are cut and a short rubber and fabric hose connection is used to reunite them. In this way breakage of the pipe line by vibration is avoided. For a similar reason pure gum tubing is used for connections to the airspeed indicator, gas pressure and oil pressure gages.

The vital necessity of accuracy in the indications of the compass requires that the instrument be held in a special rubber gasket which will eliminate all vibrations.

The most reliable hard rubber storage battery jars are employed to minimize danger of breakage and acid leakage. Usually in an airplane storage battery installation, the battery rests in a lead trap but in the Sikorsky plane a rubber mat was used to save weight.

The cabins in the fusilage were lighted with a series of windows made water tight by setting the glass in channels of rubber. This

arrangement was intended also to add to the comfort of the crew by excluding air currents as well as moisture.

All of the delicate instruments, such as tubes in the radio apparatus, chronometer and other instruments on the instrument board, were each independently set in special fittings of soft sponge rubber.

While the plane was believed to have sufficient buoyancy to float on the ocean in case of a forced landing, folding rubber life boats were carried in the sleeping compartment fitted for rapid inflation in the emergency of a forced landing at sea.

Anti-Oxidants in Oils

THE use of anti-oxidants in the rubber industry will rapidly become general as manufacturers, dealers and consumers, particularly the latter, become aware of their practical value in preventing deterioration of rubber goods of every kind. Scarcely was the success of anti-oxidants in rubber announced than their equally valuable application in the oil industry was made known.

This application touches intimately the division of the insulated wire and cable industry which involves both rubber chemistry and electrical engineering problems. In the process of manufacturing cables with oil impregnated paper wrapping great loss and inconvenience is experienced at the oil impregnation stage by thickening and sludging of the petroleum oil used for the purpose. It is also noted in service that oil insulation deteriorates. The cause of deterioration was believed to be oxidation of the oil hastened by the temperature used at the impregnating tanks and acting on this belief experiments were conducted with marked success using the type of anti-oxidants found effective in preventing oxidation in vulcanized rubber.

The oils used in the insulated wire industry for impregnating and in the electrical industry for oil switches, transformers, etc., are mainly hydrocarbons derived from petroleum. They vary in consistency from free flowing products of comparatively low viscosity to heavier stocks such as cylinder oils and petrolatum. Among the desirable properties of oils for this industry are high resistivity or insulating value, high dielectric strength, and low factor of power loss. It has been recognized that the oils employed for these purposes deteriorate rapidly and that the deterioration is essentially due to oxidation.

The materials which have been found most suitable in retarding or controlling oxidation are principally comprised in the group of condensation products of aldehydes with nitrogenous bases, the latter include ammonia as well as simple and complex amines. Among such compounds are the condensation products of aldol with alpha-naphthylamine, of butyraldehyde with alpha-naphthylamine, of acetaldehyde with aniline (both acid and neutral condensates), and of furfural with ammonia. Certain other compounds have also been found to be useful for the purposes indicated, such as para-aminophenol, and the acetone-amines (condensation products of ketones with nitrogenous bases).

A concrete illustration of a most effective anti-oxidant in oil is Age Rite, which by reason of its resinous nature forms an intimate mixture with the oil. For use in some particular industries a wholly oil soluble anti-oxidant, which is a slight modification of Age Rite, has been developed and it can be used in amber-colored oils without causing discoloration. One method of processing an oil is to add an anti-oxidant in solution, then effect a combination of this chemical with the oxygen in the oil, thereby eliminating all free oxygen. The oil is then filtered and further anti-oxidant is added as a stabilizing agent.

As an instance of the effect of anti-oxidants on resistivity aging, an untreated sample of petrolatum suitable for cable impregnation showed an initial resistivity of 18 million megohms, and after aging for ten days at 100 degrees C. showed a resistivity of 5 million megohms. The same petrolatum treated with anti-oxidants showed an initial resistivity of 30 million megohms and after ten days at 100 degrees C. showed 24 million megohms. The power factor of the untreated sample was 0.3 per cent at 60 degrees C. and 2.9 per cent at 100 degrees C. while the power factor of the treated sample was below 0.1 per cent at 60 degrees C. and was 0.3 per cent at 100 degrees C. The dielectric strength was not impaired by the treatment.

The application of these oxidation retarders has also been found useful in connection with oils and oil compositions in many industries besides the electrical industry. Some typical examples may be cited as follows:

Linoleum hardens with age and loses its cushioning qualities due to a continued oxidation of its oil base. This oxidation can be greatly retarded by the use of an anti-oxidant added to the oil compound after the oxidation of the drying oils has been carried to the desired point. Painted or varnished surfaces may also be protected from deterioration due to oxidation or rust.

Linseed oil paint may be prevented from forming an oxidized film by a protective layer of oil-soluble anti-oxidant poured on the top of an opened can of paint. Likewise a used paint brush may be prevented from hardening when not in use by dipping or leaving it in oil containing an anti-oxidant. Mixtures of animal, mineral and vegetable oils used for oil tempering may be protected from deterioration at high temperatures by adding an anti-oxidant to the oil bath. It is also possible to retard deterioration of oil used for lubrication in gasoline and automobile engines. Crude oil is frequently stored in tanks at the oil wells and at the refineries a long time before refining. This crude oil is subject to continuous oxidation and this action may also be greatly retarded by the use of a small amount of anti-oxidant in the oil tank. The varnish industry experiences loss by the darkening of rosin, due among other things, to oxidation by heat. This oxidation of rosin may also be retarded by the use of anti-oxidants.

It is estimated that in the rubber industry of the United States about 30,000 tons of mineral rubber are used annually. This material is an oxidized asphalt. The amount of its oxidation determines the hardness and brittleness of the finished mineral rubber. Its oxidation continues slowly over a long period of time. The use of anti-oxidants in oil now makes possible the manufacture of much more stable mineral rubber and therefore of better aging qualities.

Incidentally it is of interest to note that one of the newest applications of anti-oxidants is that for preventing the corrosion of steel pens. The preservative effect is secured by adding 1 per cent of anti-oxidant in water dispersion to the ink.

Oil anti-oxidants and their application to widely diversified industries have been fully covered by patents[1], the invention of a well known American rubber research chemical engineer, Dr. A. A. Somerville.

[1]United States patents 1,594,982 and 1,594,983. *The India Rubber World*, October 1, 1926, p. 22.

SUIT INVOLVING USE OF RUBBER ACCELERATORS

In Philadelphia, October 6, the United States Circuit Court of Appeals for the Third Circuit will hear an appeal from the decision rendered in the lower District Court regarding the recent diphenyl guanidine suit of the Dovan Chemical Corporation vs. the Corona Cord Tire Co. John W. Davis, formerly United States Ambassador to the Court of St. James, England, and late presidential candidate, will present the arguments of the Dovan organization, the plaintiff-appellant in this suit. With him are associated Fraley & Paul of Philadelphia, Pennsylvania, and the following from New York City: James M. Nicely, Julian S. Wooster, and James J. Kennedy. The defense will be conducted by Pennie, Davis, Marvin & Edmonds of New York. The outcome of this decision is of great interest to the rubber industry, as it will establish a precedent for future accelerator inventions.

Rubber Division Meeting and Symposium of the A. C. S.

THE Seventy-Second Meeting of the American Chemical Society was held September 5 to 11, at Philadelphia, Pennsylvania. This was the Golden Jubilee Meeting commemorating the Fiftieth Anniversary of the Society. It began with a pilgrimage to the home of Joseph Priestley at Northumberland, Pennsylvania. Priestley was the discoverer of oxygen who gave rubber that name because the material was useful to rub out pencil markings.

The significance and importance of the anniversary and the exceptional interest and merit of the general and divisional programs served to draw a very large attendance. This was particularly true of the Rubber Division which featured a two-day symposium on crude rubber attended by 300 or more chemists, technologists and experts in wild and plantation rubber. So great was the interest in this symposium that its sessions were held in the auditorium of Drexel Institute instead of in a lecture hall originally provided at the University.

Many well-known American rubber chemists, technologists, and authorities on crude rubber contributed papers embodying the latest rubber researches. Also a number of European rubber chemists contributed papers of great interest and value, affording the American chemists highly valued opportunities for the personal interchange of scientific views and experiences.

The first session of the Rubber Division, held at Logan Hall, September 7, was preceded by a business meeting and election of officers for the ensuing year. The following were elected: R. P. Dinsmore, chairman; Harry L. Fisbee, vice chairman; Arnold H. Smith, secretary-treasurer; Executive Committee: N. A. Shepard, C. C. Davis, Ira Williams, Frank Kovacs, and A. A. Somerville.

The symposium clearly demonstrated that the advance of the rubber industry is dependent on continuation of scientific research. A recent outstanding example is the progress in development of guayule rubber.

John M. Bierer, retiring chairman of the Rubber Division, rendered an excellent service to the rubber industry by planning and executing the symposium so successfully. It would have been impractical had it not been for the generous support of George E. Hall, president and general manager of the Boston Woven Hose & Rubber Co., supplemented by 100 per cent cooperation on the part of many other executives who encouraged participation by their research departments.

Abstracts of Papers

The Structure of Rubber. A critical review of recent X-ray research leads to certain general conclusions and to a new hypothesis of the structure of rubber. This hypothesis, which conforms to all facts so far observed, assumes that there is a preformed definite orientation of the molecules, that even before stretching, molecular aggregates of definite size are present, and that the only reason they are not revealed by X-ray examination is that they are swollen by the less highly polymerized hydrocarbon. When stressed, the liquid phase is expelled, allowing the appearance of interference phenomena. The theory explains the elastic properties of rubber by assuming an equilibrium between hydrocarbons of the same chemical constitution of greater and less degrees of polymerization.—Ernst A. Hauser.

Organic Polysulphides as Accelerators of Vulcanization. In view of current belief that accelerators are converted during vulcanization into unidentified derivatives which in turn give rise to active sulphur, certain derivatives of typical accelerators were prepared and their accelerating power determined. The derivatives prepared included polysulphides and thioguanidines. From their relative accelerating power, evidence was obtained of their probable formation from the corresponding bases during vulcanization. Indications were that during vulcanization diphenylguanidine and piperidine form polysulphides, whereas triphenylguanidine reacts in a somewhat different way.—Marion C. Reed and Cecil E. Board.

Rubber Linings for Acid Leaching Tanks. Laboratory tests show that properly compounded rubber mixtures offer satisfactory resistance to sulphuric acid up to 50 per cent concentration and to concentrated hydrochloric acid, but not to nitric acid. There is little choice among the pigments used in the mix. Zinc oxide has properties, however, which render it particularly favorable. An acid leaching tank lined with a rubber mixture containing 55 per cent zinc oxide was in satisfactory condition after 9 months exposure to 20 degrees Bé sulphuric acid at 60 degrees C. Reclaimed rubber can also be compounded to give satisfactory resistance to acids.—H. A. Depew.

Accelerators. This paper outlines the relation between the chemical constitution and the accelerating power of amines and their thio derivatives; phenylhydrazine and its thio acids, diarylthioureas, diarylguanidines, dithio acids, and the salts of basic accelerators and dithio acids. Accelerating power usually follows closely the chemical additive power of the compound, which points to at least one phase of acceleration being a chemical reaction. The accelerator may attach itself to the unsaturated centers of the rubber complex and thus open up the latter to attack. Salts formed of two accelerators are in general inapplicable to the study of constitution and accelerating power, for in the presence of zinc oxide they generally behave as mixtures of the corresponding base and zinc salt of the acid.—W. J. S. Naunton.

Some Methods of Studying Cord Tire Fabric. Hysteresis loss and flexing life are used as a measure of fatigue in tire cords. Hysteresis loss shows that the original properties of the cord are not maintained. The flexing test subjects the cord to repeated stresses and in the event of cord fabric failure in tire service is of value as a means of determining the desirability of changes in cord construction and of developing methods of improving the flexing life of a given type of cord. Improvement in flexing life of a given cord may be brought about by impregnation with rubber cements containing compounding and vulcanizing ingredients. Road tests indicate that in the event of fabric failure, the mileage of certain tires can be increased by increasing the flexing life of the fabric.—F. W. Stavely and N. A. Shepard.

The Importance of Rubber in Modern Civilization. There is no danger that the market for rubber will diminish in the future. On the contrary, its importance will augment with the advance of civilization since the essential function of rubber is to counteract two of the undesirable features of machine civilization, noise and jar. The purpose of rubber is to serve as a buffer. It takes up the shock and jolts and jars, it reduces the sound of clatter and noise. Rubber serves to prevent leakage in various ways, the leakage of rain to the skin and the leakage of electricity from the wire. This is a cushioning age. We demand springs and soft sittings. We seek for silence in a noisy age. Railroad trains are stopped without shock by airbrakes using rubber hose. In the early days air was used only for breathing purposes. Later it was employed for feeding flames. Now we use it to support us in the airplane and pneumatic tire. The use of rubber as a covering and a cushion to absorb shock and reduce friction is in line with the process of evolution from mollusks to man. Such buffers will be more and more needed to counteract the stress and strain of modern life as civilization becomes more and more speedy and complex. Rubber is a model substance. It possesses in a high degree the virtues which human beings attain with difficulty. The quality of stick-

ing together under strain is what makes a nation strong. Rubber rises after repression and shows amazing ability in the come-back. In fact, if I were to make a motto out of a material I should choose rubber as the ideal, for is there any temperamental virtue more admirable than resiliency?—Edwin E. Slosson.

The Wild and Plantation Rubber Production of Africa and Tropical America. The history of wild rubber production from 1900 to 1925 shows that of a total of 4,757,000 tons from all sources, 28 per cent came from tropical America and Africa, and that in the 1921-25 period only 8 per cent of the total rubber produced came from wild sources. The present status of the sources of wild rubber is reviewed critically with the object of determining the possibility of increasing the production of wild rubber. Among the species considered are wild guayule rubber in northern Mexico, wild and planted Castilla rubber in tropical America, wild Pará rubber on the Amazon, wild and planted Manihot rubber in Northeastern Brazil, planted Hevea rubber in Africa, and wild and planted rubber of species such as Landolphia, Funtumia, Castilla, and Manihot.—H. N. Whitford.

Research on Raw Rubber at the Netherlands Government Institute at Delft. Esters which are not extracted by acetone occur in raw rubber. By swelling in benzene and subsequent extraction with alcoholic potassium hydroxide these have been isolated. Sulphur was found to be present in raw rubber, probably being a decomposition product of the proteins. It was proved that iron under certain conditions has a detrimental effect almost comparable with that of copper, the rubber becoming tacky. In these cases iron can be traced to the acetone extract of raw rubber, proving that soluble iron compounds have been formed.—A. van Rossem.

Recent Developments in the Preparation of Plantation Rubber. Present methods of production of plantation rubber are on the whole satisfactory and radical alterations in the methods are unlikely. The aim is greater uniformity in all respects and freedom from blemishes. Various details are discussed, such as acid coagulants and their influence on the rubber, particularly on the rate of cure in the case of acetic acid, formic acid, sulphuric acid, alum and sodium fluosilicate; fungicides and preservatives; moldy rubber and spotty crêpe; the use of para-nitrophenol and dinitro-ortho-cresol; smoking and supplies of fuel; the substitution of unsmoked for smoked sheet; blanket crêpe and the influence of the temperature of drying; whole latex and sprayed rubber and a comparison with other types; fractional coagulation; tank sheet and pan sheet; rolling machines and air dripping; water soaking, scrubbing, drying and packing.—Henry P. Stevens.

The Chemistry of Guayule Rubber. The scientific literature on the guayule shrub and on its rubber product is reviewed from the chemical point of view. Variations in the composition and quality of guayule rubber are the result of variations in the shrub itself, of the condition of the shrub at the time the rubber is extracted, of the method of extraction, and of the method of purifying the rubber. Deterioration of the shrub is the leading problem, both from the standpoint of yield and of uniformity in quality of the rubber. Agricultural developments and chemical and physical tests of new improved products from the guayule shrub are described, together with a discussion of the potential possibilities of guayule rubber.—David Spence.

The Composition and Structure of Rubber. An outline of the most authentic work on the rubber hydrocarbon is presented, showing evidence of the chemical structure, unsaturation, and chemical activity. A similar outline is given for the acetone soluble by-substances and for the protein. Some new data are given for all three classes of material. Direct evidence of structure is discussed and also many manifestations which must be explained by any theory of rubber structure. Some apparent contradictions are pointed out and new facts added. A brief discussion is given of certain theories and the need for confirmatory work is pointed out, with special reference to quantitative data.—R. P. Dinsmore.

The Direct Use of Rubber Latex with Special Reference to Vulcanized Latex. Early attempts were made to use latex directly, both in South America and subsequently in England. Interest was revived with the growth of the plantations and recent developments in the direct use of latex rest upon the work of numerous technologists. Latex can be concentrated and vulcanized and utilized for the manufacture of sheet rubber, proofings, dipped goods, fiber masses, and various other types of goods. The use of latex in general depends upon the properties of the vulcanized latex rubber obtainable compared with ordinary rubber and upon the development of economic processes for concentrating or spraying vulcanized latex.—Philip Schidrowitz.

X-Ray Contributions to the Analysis of the Structure of Rubber. The production, properties and present uses of X-rays are described briefly. X-ray researches on the structure of rubber by Pummerer and Koch, Katz, Hauser and Mark, Ott and Clark are reviewed and correlated from the point of view of the experimental methods employed. The paper discusses crystalline substances present in unstretched raw rubber, the appearance of crystalline diffraction effects in stretched rubber and the relation between their intensity and the deformation, the effects of fillers, vulcanization, temperature and solvents, and the crystal lattice of rubber. An interpretation is given of the mechanism of stretching and of the structure before and after and the possible existence of preformed swollen aggregates. Following this, X-ray studies of balata, gutta percha and proteins in rubber latex are presented for the first time. X-ray diagrams of shellac show the possibility of following the polymerization of rubber and correlating this phenomenon with its structure.—George L. Clark.

The Testing of Raw Rubber. The chemical nature of the resin of rubber is reviewed, with a discussion of its influence on the aging of raw rubber and the effect of its various components on the vulcanizing properties of rubber. In this connection new data are presented, dealing with samples of rubber analyzed at the Imperial Institute of London over twenty years ago and now analyzed again. Considerations of a speculative character are advanced respecting the evaluation of the hydrocarbon component of raw rubber, its relation to viscosity and swelling and the causes of elasticity in rubber.—G. S. Whitby.

Alternative Materials for Rubber. The term "alternative materials" is used to designate substances already known, or yet to be discovered, that might be employed in the industries in the place of rubber. It is suggested that instead of attempting to produce a synthetic composition with the exact properties of natural rubber, it might be more rational to make materials with superior properties for specific purposes. The properties of rubber that come into play in insulated wire, waterproof shoes and automobile tires are subjected to analysis in considerable detail. The extent to which rubber and other well-known substances fail to meet modern requirements is discussed.—E. B. Spear.

The Production of Guayule Rubber. The crude rubber requirements of the United States within a very few years are estimated at a billion pounds annually. The assumed objective for guayule would be one-quarter of that amount or 250,000,000 pounds. This output would require 640,000 acres, maturing one-fourth of its growth annually. Plantation rubber production averages 1,660 pounds per laborer per year. Guayule rubber can be produced in the United States by well paid labor averaging 25,000 pounds per man per year. Eventually guayule will be grown in the United States by farmers who will contract their crops, guided and financed by the local factory organization.—George H. Carnahan.

Optimum Cure Criteria of Vulcanized Rubber. By recording for the first time current thought regarding the selection of proper cures, the aim is to place at the disposal of plantation research workers data to assist them in standardizing crude rubbers. Criteria employed in the past are reviewed historically and critically, together with a discussion of the relation between the type of

compound and the value of any criterion. The distinction between optimum cure and technical cure is pointed out, and the value of tensile product as a quality index is emphasized. There is also included a discussion of such subjects as the relation between tensile product and the rate and degree of cure, between tensile product and energy of resilience or tear and between tensile product and aging, with illustrations of the methods for selecting technically correct cures in tires, footwear and mechanical goods.—W. B. Wiegand.

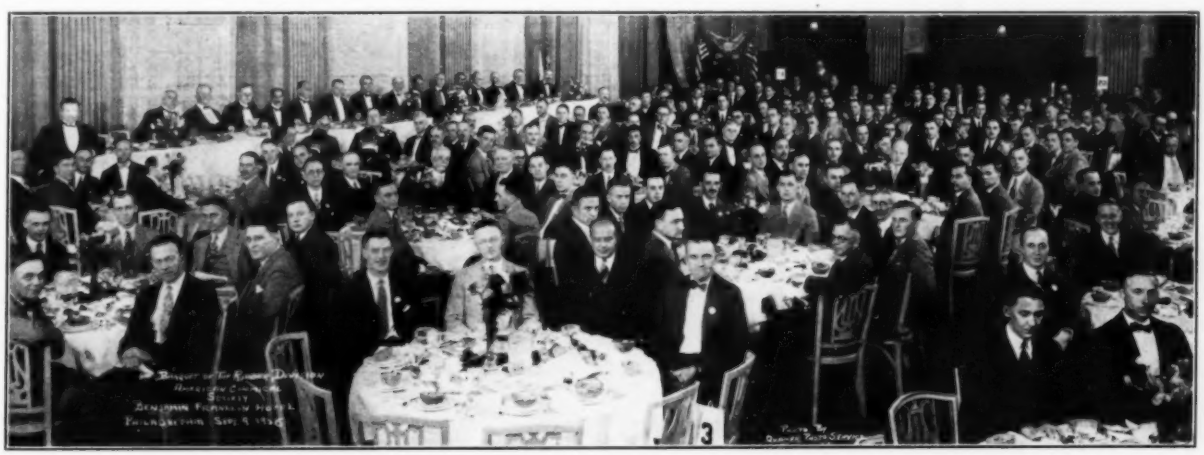
The Botany and Cultural Problems of Guayule. There are more than 100 producing plants scattered throughout the plant kingdom. Usually rubber is in the form of latex emulsion, a glandular secretion under hydrostatic pressure which forces some of the latex out when the ducts containing it are severed. In guayule there is no glandular system and the rubber occurs in the general parenchymous cells of the plant. It ranges in a broad zone from the State of Zacatecas to a little north of the international boundary into the big bend section of Texas. Its power to withstand drought enables it to thrive under a broad selection of soil and climate. Because of the special environment necessary to its best economic development, guayule shrub will never produce the tonnage of plant per acre per year that is a natural result with Hevea in the tropics, but in the manufacture of pure caoutchouc per year per acre guayule, given the conditions of certain large areas in California, may be depended upon to at least equal the present performance of plantation Hevea.—William B. McCallum.

rubber and the future commercial realization of synthetic rubber.

J. D. Tew, works manager of The B. F. Goodrich Co., spoke of early accelerator research, describing the work of George Onslager in 1904, who found in aniline the first practically successful organic accelerator of vulcanization.

Everett Morss, president of the Simplex Wire & Cable Co., said that the wire and cable industry stands between the rubber industry and the electrical industry, sharing the problems of each. The cable industry is thus most varied in the chemical and electrical aspects of its rubber problems and works under exacting electrical specifications, requiring the aid of research to keep pace with the development of the electrical industry. The real advances in rubber technology in the past 25 years he attributed chiefly to the rubber chemists. The progress in the next decade due to research will surpass all that made from Goodyear's day to the present time.

James F. Norris, president of the American Chemical Society, emphasized the importance of fundamental research in industry and urged the need of cooperative effort to that end. He expressed the belief that synthetic rubber is nearer than we think. Its commercial realization will serve economically as a balancing force against the control of the price of plantation rubber. The study of synthetic plastics is even more important than that of synthetic rubber. These plastics will be derived from petroleum and that field is now being studied by cooperative research under the direction of the American Petroleum Association.



Banquet of the Rubber Division, A. C. S., Philadelphia, Pennsylvania, September 9, 1926

The Banquet

The Rubber Division banquet, which was held Thursday evening, September 9, in the Crystal Ballroom of the Benjamin Franklin Hotel, was attended by about 300 chemists and their guests, representing every phase of the rubber industry. Chairman Bierer after briefly expressing his thanks to all who aided in the arduous task of planning the rubber symposium and banquet introduced the toastmaster of the evening, J. C. Weston, president of the Ajax Rubber Co. and president of the Rubber Association of America. Executives representing some of the leading rubber companies in the United States spoke on what research has meant to their companies. The first to speak was H. Stuart Hotchkiss, president, United States Rubber Plantations, Inc. Mr. Hotchkiss outlined the general development of the extensive Hevea plantations owned by his company in Sumatra. It is planned to develop, by scientific research, the rubber yield of these plantations on the basis of the greatest production of rubber per tree per acre. The management is also mindful of the economic necessity of the control of tree diseases, also of the possibilities of competition by native grown

Sir James C. Irvine, principal of St. Andrews' University, Scotland, made many happy and witty references to his own experiences in the United States on the present and former occasions. Earlier in the week the honorary degree of Doctor of Science was conferred on Dr. Irvine by the University of Pennsylvania.

The principal address was made by C. F. Kettering, vice president, General Motors Corporation in charge of research.

His advice to research men was very aptly illustrated from his experience. It is an excellent plan to budget the research department because the solution of a problem depends more upon accurate thinking than upon the expenditure of unlimited sums for apparatus equipment. When beginning the study of a problem one should first try all the sensible things that ought to apply, then try all the unlikely things. It was on this plan that it was discovered how to finish an automobile body in one hour by new and unusual means, instead of in 34 days by ordinary painting materials and methods. An economic balance should be maintained between the departments of sales, research, manufacturing and engineering. The research man will sell his research when he goes after worth while results and tackles his problem from the point of view of the consumer and not that of the unresponsive dealer.

What the Rubber Chemists Are Doing

Effect of Age-Rite in Various Compounds

By A. A. SOMERVILLE

The interest and importance of anti-oxidants to the rubber goods manufacturer, dealer and consumer equal or exceed that existing for accelerators because of the potential saving due to their improving the aging quality of every type of rubber goods. After the general introduction of accelerators of vulcanization rubber research chemists turned their attention to developing anti-oxidants for rubber. The correct lead was soon found and several anti-oxidants are now commercially available. Improved aging of rubber goods is of such vital importance that the following authentic data are submitted for general information. It represents four months' intensive experimental study of the anti-oxidant Age-Rite presented in the form of 14 systematic tabulations. These give a comprehensive view of the preservation of the tensile properties of a number of typical rubber stocks in a range of cures and exhibit the effect of different proportions of anti-oxidant. These tests will serve the compounder as a means for checking his own experimental results and assist him in practical compounding. Attention is called to the plan of the tests. Each compound is itemized first as a control without Age-Rite and is then repeated with different proportions of the latter added. These proportions are one half, 1 and 2 per cent on the rubber. Most of the tread stocks were cured at 45 pounds steam for varying times. The cure of the other stocks varied from 20 to 60 pounds of steam according to the accelerator used and the rubber content of the mixing. In every instance the remarkable preservative effect of the anti-oxidant is evident. In the case of tread stocks 1 per cent of Age-Rite on the rubber is seen to be sufficient to afford maximum preservation. The 14 day period oven life test is equivalent to 6 years of ordinary aging. The data given for the group of tire treads show that without Age-Rite the stocks accelerated by

I. TREAD STOCK USING TUADS, D.P.G. AND AGE-RITE

Cure and Life	No Age-Rite	1% Age-Rite on Rubber	2% Age-Rite on Rubber
Rubber	55.775	55.775	55.775
Mineral Rubber	5.00	5.00	5.00
Zinc Oxide	15.00	15.00	15.00
Carbon Black	20.00	20.00	20.00
Petrolatum	2.00	2.00	2.00
Sulphur	1.00	1.00	1.00
Tuads	.125	.125	.125
D.P.G.	.300	.300	.300
Age-Rite		.56	1.12
	100.000	100.560	101.120

Press Cure at 20 lbs.	Load @ 300%	Tensile @ Break	% Elong @ Break	Load @ 300%	Tensile @ Break	% Elong @ Break	Load @ 300%	Tensile @ Break	% Elong @ Break
30 min.	1380	4480	670	1270	4630	670	1250	4330	660
40 "	1310	4450	675	1320	4360	645	1290	4410	645
50 "	1350	4260	635	1340	4310	625	1280	4220	620
60 "	1340	4330	620	1360	4580	640	1290	4220	640

Oven Life Test @ 158° F.	40 min. @ 20 lbs. T.	E.	50 min. @ 20 lbs. T.	E.	40 min. @ 20 lbs. T.	E.	50 min. @ 20 lbs. T.	E.	40 min. @ 20 lbs. T.	E.	50 min. @ 20 lbs. T.	E.
Original	4450	635	4260	625	4360	641	4310	635	4430	641	4220	640
3 days	3500	580	3100	580	4040	615	3900	581	4340	600	4260	595
7 "	3320	585	2640	530	3720	533	3470	590	3950	575	3700	570
10 "	2140	500	1770	460	3400	560	3360	575	3430	560	3660	575
14 "	1870	495	1071	380	2100	580	2700	520	3400	555	3400	570

II. TREAD STOCK USING D.P.G. AND AGE-RITE

Cure and Life	No Age-Rite	½% Age-Rite on Rubber	1% Age-Rite on Rubber	2% Age-Rite on Rubber
Rubber*	55.3	55.3	55.3	55.3
Zinc Oxide	15	15	15	15
Carbon Black	20	20	20	20
Mineral Rubber	5	5	5	5
Oil	2	2	2	2
Sulphur	2.25	2.25	2.25	2.25
D.P.G.	.45	.45	.45	.45
Age-Rite		.275	.55	1.1
	100.00	100.275	100.55	101.10

Press Cure at 45 lbs.	Tensile @ Break	% Elong @ Break	Tensile @ Break	% Elong @ Break	Tensile @ Break	% Elong @ Break	Tensile @ Break	% Elong @ Break
30 min.	3290	725	3670	725	[illegible]	[illegible]	[illegible]	[illegible]
45 "	3700	671	3947	673	4102	[illegible]	[illegible]	[illegible]
60 "	3327	650	3687	634	4122	[illegible]	[illegible]	[illegible]
75 "	3373	625	3816	626	[illegible]	[illegible]	[illegible]	[illegible]
90 "	3499	613	3683	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Oven Life Test @ 158° F.	45 min. @ 45 lbs. T.	E.	60 min. @ 45 lbs. T.	E.	45 min. @ 45 lbs. T.	E.	60 min. @ 45 lbs. T.	E.	45 min. @ 45 lbs. T.	E.	60 min. @ 45 lbs. T.	E.	45 min. @ 45 lbs. T.	E.	60 min. @ 45 lbs. T.	E.
Original	3700	671	3311	610	3947	673	3887	654	4400	725	4122	691	[illegible]	[illegible]	[illegible]	700
2 days	3234	620	2787	548	3712	620	3207	579	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
3 "	2134	529	1905	450	3001	555	2575	569	3470	[illegible]	[illegible]	532	[illegible]	[illegible]	[illegible]	532
7 "	1613	438	1025	317	2325	521	1814	428	2918	567	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	537
9 "	1196	468	815	283	1967	480	1350	354	2602	533	[illegible]	437	2012	[illegible]	[illegible]	525
12 "	914	283	770	280	1479	437	1098	290	[illegible]	[illegible]	1567	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
14 "	866	250	754	280	1398	307	1013	273	1613	425	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

III. TREAD STOCK USING D.O.T.G. AND AGE-RITE

Cure and Life	No Age-Rite	1% Age-Rite on Rubber	2% Age-Rite on Rubber
Rubber	55.78	55.78	55.78
Mineral Rubber	5.00	5.00	5.00
Zinc Oxide	15.00	15.00	15.00
Carbon Black	20.00	20.00	20.00
Petrolatum	2.00	2.00	2.00
Sulphur	1.80	1.80	1.80
D.O.T.G.	.42	.42	.42
Age-Rite		.56	1.12
	100.00	100.56	101.12

Press Cure at 40 lbs.	Load @ 300%	Tensile @ Break	% Elong @ Break	Load @ 300%	Tensile @ Break	% Elong @ Break	Load @ 300%	Tensile @ Break	% Elong @ Break
30 min.	640	3800	700	680	3880	710	530	3040	715
40 "	680	3240	680	730	3750	670	730	3330	665
50 "	765	3260	685	840	3730	680	830	3620	700
60 "	810	3340	650	960	3380	680	900	3780	670
70 "	800	3320	645	980	3840	680	900	3700	655

Oven Life Test @ 158° F.	50 min. @ 40 lbs. T.	E.	60 min. @ 40 lbs. T.	E.	50 min. @ 40 lbs. T.	E.	60 min. @ 40 lbs. T.	E.	50 min. @ 40 lbs. T.	E.	60 min. @ 40 lbs. T.	E.
Original	3980	685	3340	650	3720	680	3800	680	3980	700	3780	670
3 days	3400	680	2700	610	3400	645	3320	650	3697	615	3500	615
7 "	1430	605	2260	560	1130	610	2980	600	2920	611	1170	571
10 "	1060	370	1430	565	2440	580	2700	525	2940	555	2880	550
14 "	880	400	960	410	2250	500	2160	505	2230	535	2200	530

IV. TREAD STOCK USING HARD E.A. AND AGE-RITE

Cure and Life	No Age-Rite	1% Age-Rite on Rubber	2% Age-Rite on Rubber
Rubber	55.08	55.08	55.08
Mineral Rubber	5.00	5.00	5.00
Zinc Oxide	15.00	15.00	15.00
Carbon Black	20.00	20.00	20.00
Petrolatum	2.00	2.00	2.00
Sulphur	1.80	1.80	1.80
Hard E.A.	1.12	1.12	1.12
Age-Rite		.56	1.12
	100.00	100.56	101.12

Press Cure at 40 lbs.	Load @ 300%	Tensile @ Break	% Elong @ Break	Load @ 300%	Tensile @ Break	% Elong @ Break	Load @ 300%	Tensile @ Break	% Elong @ Break
30 min.	590	3080	720	590	3230	740	480	2940	720
40 "	600	3350	720	620	3660	695	590	3360	725
50 "	670	3500	690	815	3790	685	820	3790	695
60 "	860	3760	680	910	4040	665	830	3880	680
70 "	900	3800	670	920	3820	675	865	3570	665

Oven Life Test @ 158° F.	50 min. @ 40 lbs. T.	E.	60 min. @ 40 lbs. T.	E.	50 min. @ 40 lbs. T.	E.	60 min. @ 40 lbs. T.	E.	50 min. @ 40 lbs. T.	E.	60 min. @ 40 lbs. T.	E.
Original	3650	630	3700	620	3710	685	4040	665	3700	690	3880	690
3 days	3500	660	3420	620	3440	680	3740	640	3080	685	3540	655
7 "	2720	580	2700	400	3300	640	3360	615	3520	660	3400	650
10 "	1780	510	1510	440	3000	620	3880	600	3410	635	3380	615
14 "	1770	530	1450	380	2880	505	2700	540	3250	640	3100	580

V. TREAD STOCK USING CAPTAX AND AGE-RITE

Cure and Life	No Age-Rite	1% Age-Rite on Rubber	2% Age-Rite on Rubber
Rubber	55.46	55.46	55.46
Mineral Rubber	4.00	4.00	4.00
Zinc Oxide	15.00	15.00	15.00
Carbon Black	20.00	20.00	20.00
Petrolatum	2.00	2.00	2.00
Stearic Acid	1.00	1.00	1.00
Sulphur	1.80	1.80	1.80
Captax	.74	.74	.74
Age-Rite		.55	1.12
	100.00	100.55	101.12

Press Cure at 20 lbs.	Load @ 300%	Tensile @ Break	% Elong @ Break	Load @ 300%	Tensile @ Break	% Elong @ Break	Load @ 300%	Tensile @ Break	% Elong @ Break
30 min.	770	3380	625	790	3720	680	900	3780	680
40 "	890	3880	655	880	3860	680	920	3900	660
50 "	980	3930	660	970	3900	675	1000	4000	670
60 "	920	4040	640	1010	4100	670	1030	3940	665
70 "	1040	3870	645	1040	4230	660	1070	4050	675

Oven Life Test @ 158° F.	40 min. @ 20 lbs. T.	E.	50 min. @ 20 lbs. T.	E.	40 min. @ 20 lbs. T.	E.	50 min. @ 20 lbs. T.	E.	40 min. @ 20 lbs. T.	E.	50 min. @ 20 lbs. T.	E.
Original	3880	655	3950	660	3960	680	3880	675	3980	680	4000	670
3 days	3320	635	3320	595	3850	615	3710	620	3820	655	3880	620
7 "	3370	600	3380	570	3780	590	3900	565	3900	610	3700	575
10 "	3100	565	3140	550	3630	605	3580	605	3900	585	3500	580
14 "	3080	535	2980	520	3480	580	3300	555	3460	565	3400	540

VI. TREAD STOCK USING CAPTAX AND AGE-RITE

Cure and Life	No Age-Rite	1% Age-Rite on Rubber	2% Age-Rite on Rubber
Rubber	55.80	55.80	55.80
Mineral Rubber	4.00	4.00	4.00
Zinc Oxide	15.00	15.00	15.00
Carbon Black	20.00	20.00	20.00
Petrolatum	2.00	2.00	2.00
Stearic Acid	1.00	1.00	1.00
Sulphur	1.80	1.80	1.80
Captax	.4	.4	.4
Age-Rite		.56	1.12
	100.00	100.56	101.12

Press Cure at 40 lbs.	Load @ 300%	Tensile @ Break	% Elong @ Break	Load @ 300%	Tensile @ Break	% Elong @ Break	Load @ 300%	Tensile @ Break	% Elong @ Break
20 min.	660	2980	665	700	3400	665	690	3300	680
30 "	810	3370	650	890	3600	665	805	3600	695
40 "	830	3460	665	980	3720	680	810	3540	670
50 "	860	3320	625	970	3630	640	820	3400	665
60 "	930	3240	635	970	3600	640	1025	3520	640
70 "	880	3270	620	1020	3470	630	1050	3500	685

Oven Life Test @ 158° F.	30 min. @ 40 lbs. T.	E.	40 min. @ 40 lbs. T.	E.	30 min. @ 40 lbs. T.	E.	40 min. @ 40 lbs. T.	E.	30 min. @ 40 lbs. T.	E.	40 min. @ 40 lbs. T.	E.
Original	3370	650	3460	645	3600	665	3720	680	3680	695	3540	670
3 days	3100	630	2980	590	3400	630	3520	605	3790	620	3540	645
7 "	2940	575	2900	555	3090	565	3530	575	3720	580	3750	580
10 "	2870	550	2620	540	3450	580	3600	630	3500	580	3370	570
14 "	2480	505	1980	545	3160	525	3000	530	3520	550	3400	545

D. P. G. or D. O. T. G. suffered greater and more rapid deterioration than those cured with the other accelerators and that those in which Captax was used the aging loss was only a third to a half as great as that of the others. In every instance, however, the stocks after 14 days oven aging at 158 degrees F. were preserved in marked degree by the presence of 1 per cent of Age-Rite on the rubber. Although the loss of tensile by stocks 1, 4, 5 and 6 was 50 to 75 per cent with 1 of anti-oxidant their protection was not greatly increased by doubling the proportion of the anti-oxidant, except in the case of number 6 in which the loss was reduced to 5 per cent. This excellent result was probably due to the aging support by the accelerator added to that of the anti-oxidant proper. Analysis of the results reported on a friction containing reclaim in which 1 per cent Age-Rite was used on the rubber and 1 per cent on the reclaim shows the retention by the stock of 50 per cent of its life after 14 days oven test. The

VII. TREAD STOCK USING DIXIE, THERMATOMIC, D.P.G., AND AGE-RITE

Cure and Life	No AgeRite	1% AgeRite on Rubber	2% AgeRite on Rubber
Rubber	100	100	100
Mineral Rubber	8	8	8
Zinc Oxide	10	10	10
Dixie Clay	10	10	10
Thermatomic	10	10	10
Carbon Black	30	30	30
Petrolatum	2	2	2
Sulphur	3.25	3.25	3.25
D.P.G.	1.00	1.00	1.00
AgeRite		1	2
Total	174.25	175.25	176.25

Press Cures at 40 lbs.	Load @ 300%	Tensile @ Break	% Elong @ Break	Load @ 300%	Tensile @ Break	% Elong @ Break	Load @ 300%	Tensile @ Break	% Elong @ Break
30 min.	620	3050	670	675	2950	675	550	2980	675
40 "	800	3300	660	760	3320	650	825	3230	650
50 "	960	3520	630	960	3350	640	900	3280	650
60 "	1000	3550	615	990	3350	630	1040	3400	620
70 "	1030	3420	610	1090	3500	615	1120	3420	605

Oven Life Test @ 158° F.	50 min. @ 40 lbs. T.	E.	60 min. @ 40 lbs. T.	E.	50 min. @ 40 lbs. T.	E.	60 min. @ 40 lbs. T.	E.	50 min. @ 40 lbs. T.	E.	60 min. @ 40 lbs. T.	E.
Original	3520	640	3650	600	3350	640	3350	630	3380	610	3400	620
3 days	2700	586	2300	530	3460	590	3300	600	3280	615	3160	575
7 "	2060	525	2080	480	2800	550	2920	535	3170	545	3070	530
10 "	1250	440	1430	375	2300	535	2200	495	2730	545	2610	510
14 "	975	380	980	305	1300	440	2020	475	2580	515	2520	495

VIII. TREAD STOCK USING RECLAIM, D.P.G. AND AGE-RITE

Cure and Life	No AgeRite	½% AgeRite on Rubber ½% AgeRite on Reclaim	1% AgeRite on Rubber ½% AgeRite on Reclaim
Rubber	40.6	40.6	40.6
Reclaim	30.0	20.0	30.0
Zinc Oxide	12.0	12.0	12.0
Carbon Black	10.0	11.0	10.0
Mineral Rubber	5.0	5.0	5.0
Petrolatum	2.0	2.0	2.0
Sulphur	2.0	2.0	2.0
D.P.G.	0.4	0.4	0.4
AgeRite		0.3	0.5
Total	100.0	100.3	100.5

Press Cures at 40 lbs.	Load @ 300%	Tensile @ Break	% Elong @ Break	Load @ 300%	Tensile @ Break	% Elong @ Break	Load @ 300%	Tensile @ Break	% Elong @ Break
30 min.	810	2620	615	840	2640	620	760	2500	630
40 "	870	2700	620	900	2720	600	800	2700	620
50 "	980	2740	600	1100	2980	610	980	2810	615
60 "	1120	2800	550	1130	2580	575	1070	2830	585

Oven Life Test @ 158° F.	40 min. @ 40 lbs. T.	E.	50 min. @ 40 lbs. T.	E.	40 min. @ 40 lbs. T.	E.	50 min. @ 40 lbs. T.	E.	40 min. @ 40 lbs. T.	E.	50 min. @ 40 lbs. T.	E.
Original	2700	620	2740	600	2720	620	2980	610	2700	620	2810	615
3 days	1900	535	2200	535	2520	575	2500	520	2400	545	2540	550
7 "	1700	510	1650	440	2380	510	2250	500	2290	510	2370	500
10 "	1120	350	1020	335	1700	440	1710	440	1900	510	2010	465
14 "	681	340	871	341	1510	410	1550	415	1760	420	1790	440

IX. FRICTION STOCK USING RECLAIM, D.P.G. AND AGE-RITE

Cure and Life	No AgeRite	½% AgeRite on Rubber ½% AgeRite on Reclaim	1% AgeRite on Rubber 1% AgeRite on Reclaim
Rubber	61.44	61.44	61.44
Reclaim	30.00	30.00	30.00
Zinc Oxide	3.00	3.00	3.00
Softener	2.00	2.00	2.00
Sulphur	3.00	3.00	3.00
D.P.G.	.56	.56	.56
AgeRite		.46	.92
Total	100.00	100.46	100.92

Press Cures at 45 lbs.	Tensile @ Break	% Elong @ Break	Tensile @ Break	% Elong @ Break	Tensile @ Break	% Elong @ Break
30 min.	2817	700	2774	668	3010	675
45 "	2834	650	2974	658	2627	650
60 "	2865	650	2672	608	2705	633
75 "	2865	650	2597	600	2719	668
90 "	2544	625	2366	600	2466	600

Oven Life Test @ 158° F.	45 min. @ 45 lbs. T.	E.	60 min. @ 45 lbs. T.	E.	45 min. @ 45 lbs. T.	E.	60 min. @ 45 lbs. T.	E.	45 min. @ 45 lbs. T.	E.	60 min. @ 45 lbs. T.	E.
Original	2834	650	2865	650	2974	658	2672	608	2627	650	2705	633
2 days	2424	588	1837	500	2492	558	2201	475	2528	583	2039	521
6 "	1958	517	1174	425	2020	558	1604	458	2526	563	1724	467
7 "	1227	408	617	250	1907	458	1319	392	2312	508	1913	350
9 "	801	358	510	242	1424	442	1022	358	1799	475	1163	358
11 "	673	308	437	217	1158	438	600	254	1146	363	1041	339
14 "	522	287	514	233	636	238	571	238	1296	413	851	356

X. INNER TUBE STOCK USING D.P.G. AND AGE-RITE

Cure and Life	No AgeRite	½% AgeRite on Rubber	1% AgeRite on Rubber
Rubber	92.7	92.7	92.7
Zinc Oxide	3	3	3
Sulphur	3.56	3.56	3.56
D.P.G.	.74	.74	.74
AgeRite		.46	.93
Total	100.00	100.46	100.93

Unwrapped cure steam at 45 lbs.	Tensile @ Break	% Elong @ Break	Tensile @ Break	% Elong @ Break	Tensile @ Break	% Elong @ Break
20 min.	2947	760	2031	770	2871	780
30 "	3157	754	2924	750	3263	775
40 "	3378	738	3029	725	3051	729
50 "	3000	738	2720	713	2770	713

Oven Life Test @ 158° F.	30 min. @ 45 lbs. T.	E.	40 min. @ 45 lbs. T.	E.	30 min. @ 45 lbs. T.	E.	40 min. @ 45 lbs. T.	E.	30 min. @ 45 lbs. T.	E.	40 min. @ 45 lbs. T.	E.
Original	3157	754	3378	738	2924	730	3029	725	3263	775	3051	729
2 days	3562	763	3526	717	3428	753	3410	719	3008	725	3481	713
4 "	3183	700	3166	675	3494	730	3117	675	3426	729	3084	658
7 "	3000	686	2659	621	3192	717	2739	621	3440	713	2911	638
9 "	2659	683	2086	575	3016	708	2507	548	3371	698	2661	592
11 "	1965	575	1860	550	2962	633	1741	538	3333	683	2430	558
14 "	1768	600	1511	358	2005	592	1150	500	2590	656	2024	517

XI. SOLEING STOCK USING D.P.G. AND AGE-RITE

Cure and Life	No AgeRite	1% AgeRite on Rubber	2% AgeRite on Rubber
Rubber	40	40	40
Soft Hydrocarbon	20	20	20
Zinc Oxide	5	5	5
Carbon Black	33	33	33
Sulphur	1.75	1.75	1.75
D.P.G.	.4	.4	.4
AgeRite		.4	.8
Total	100.15	100.55	100.95

Press Cures at 60 lbs.	Tensile @ Break	% Elong @ Break	Tensile @ Break	% Elong @ Break	Tensile @ Break	% Elong @ Break
10 min.	1630	575	1410	500	1300	540
15 "	1760	540	1770	550	1950	540
20 "	2100	480	2100	530	2080	541
25 "	2100	510	2160	500	2270	511
30 "	2140	500	1900	490	2120	501

Oven Life Test @ 158° F.	20 min. @ 60 lbs. T.	E.	25 min. @ 60 lbs. T.	E.	20 min. @ 60 lbs. T.	E.	25 min. @ 60 lbs. T.	E.	20 min. @ 60 lbs. T.	E.	25 min. @ 60 lbs. T.	E.
Original	2130	480	2110	510	2130	530	2160	500	2080	541	2270	511
3 days	1990	435	1620	385	2040	430	1980	430	2220	480	2170	440
7 "	1480	365	1430	290	1620	390	2020	370	2200	425	2100	345
10 "	1030	310	1050	230	1680	380	1710	325	2030	400	2020	365
14 "	1000	290	1060	220	1370	310	1500	270	1970	400	1750	330

XII. PURE GUM STOCK USING TUADS AND AGE-RITE

Cure and Life	No AgeRite	½% AgeRite on Rubber	1% AgeRite on Rubber
Rubber	90.93	90.93	90.93
Zinc Oxide	3.00	3.00	3.00
Petrolatum	2.00	2.00	2.00
Sulphur	3.90	3.90	3.90
Tuads	.17	.17	.17
AgeRite		.45	.90
Total	100.00	100.45	100.90

Press Cures at 20 lbs.	Tensile @ Break	% Elong @ Break	Tensile @ Break	% Elong @ Break	Tensile @ Break	% Elong @ Break
20 min.	3900	770	4130	785	3970	760
30 "	4010	750	4010	745	4000	730
40 "	4230	770	3980	755	3940	725
50 "	3790	760	3620	730	3880	730
60 "	3640	740	3800	735	3600	710

Oven Life Test @ 158° F.	30 min. @ 20 lbs. T.	E.	40 min. @ 20 lbs. T.	E.	30 min. @ 20 lbs. T.	E.	40 min. @ 20 lbs. T.	E.	30 min. @ 20 lbs. T.	E.	40 min. @ 20 lbs. T.	E.
Original	4010	750	4230	770	4010	745	3980	755	4000	730	3940	725
2 days	3940	700	4060	720	4050	735	3960	725	4080	750	4200	700
7 "	2930	700	2920	625	3570	700	3420	670	3580	690	3680	710
10 "	2790	700	2600	645	3290	700	3600	660	3610	680	3550	680
14 "	1900	640	1150	485	3165	670	2720	600	3420	660	3520	645

XIII. PURE GUM STOCK USING TUADS AND AGE-RITE

Cure and Life	No AgeRite	½% AgeRite on Rubber	1% AgeRite on Rubber
Rubber	90.93	90.93	90.93
Zinc Oxide	3.00	3.00	3.00
Petrolatum	2.00	2.00	2.00
Sulphur	3.90	3.90	3.90
Tuads	.17	.17	.17
AgeRite		.45	.90
Total	100.00	100.45	100.90

Press Cures at 40 lbs.	Tensile @ Break	% Elong @ Break	Tensile @ Break	% Elong @ Break	Tensile @ Break	% Elong @ Break
5 min.	3370	800	3300	795	3330	815
10 "	3340	770	4100	770	3740	775
20 "	3480	795	3840	790	3790	780
30 "	3260	800	3440	805	3265	795
40 "	3140	795	3540	805	3980	790

Oven Life Test @ 158° F.	10 min. @ 40 lbs. T.	E.	20 min. @ 40 lbs. T.	E.	10 min. @ 40 lbs. T.	E.	20 min. @ 40 lbs. T.	E.	10 min. @ 40 lbs. T.	E.	20 min. @ 40 lbs. T.	E.
Original	3340	770	3600	795	4100	770	3840	790	3740	775	3900	780
3 days	3600	790	2980	720	3880	740	3800	740	4130	730	3530	740
7 "	3030	735	1980	680	3720	735	3340	750	3980	725	3220	710
10 "	2940	715	1730	480	3550	715	3160	680	3300	700	2960	600
14 "	1460	650	1060	385	3240	700	2710	625	3240	680	2800	645

XIV. CODE WIRE, WIND-SHIELD STRIPPING, CHEAP TUBING STOCK, USING LITHARGE AND AGE-RITE

Cure and Life	No AgeRite	½% AgeRite on Batch	1% AgeRite on Batch
Rubber	10	10	10
Tire Reclaim	35	35	35
Mineral Rubber	25	25	25
[illegible] Whiting	25	25	25
Litharge	4	4	4
Sulphur	2	2	2
AgeRite		.5	1
Total	101	101.5	102.0

Press Cures at 30 lbs.	Tensile @ Break	% Elong @ Break	Tensile @ Break	% Elong @ Break	Tensile @ Break	% Elong @ Break
15 min.	585	440	575	490	690	440
30 "	715	420	690	460	700	460
45 "	710	440	695	440	685	460
60 "	665	405	640	430	685	470
75 "	640	405	630	405	690	420

Oven Life Test @ 158° F.	30 min. @ 30 lbs. T.	E.	45 min. @ 30 lbs. T.	E.	30 min. @ 30 lbs. T.	E.	45 min. @ 30 lbs. T.	E.	30 min. @ 30 lbs. T.	E.	45 min. @ 30 lbs. T.	E.
Original	715	420	700	440	690	460	695	440	700	465	685	460
3 days	595	370	585	330	640	430	640	395	680	420	680	390
7 "	580	315	570	280	710	350	675	300	730	370	705	300
10 "	545	300	545	295	650	375	610	325	680	375	610	330
14 "	520	220	520	180	580	270	545	210	620	300	595	245

inner tube containing D. P. G. and 1 per cent Age-Rite shows only 30 per cent loss under the same test while essentially the same stock (No. 11) containing Tuads and 1 per cent Age-Rite showed but 15 per cent loss. Hydrocarbon stocks such as those for soling, code wire, etc., are very greatly benefited by the use of anti-oxidant. Stocks of this grade are naturally in special need of protection against aging on account of their relatively low rubber and high reclaim content.

Chemical Patents

The United States

1,593,017. VULCANIZATION OF RUBBER. Rubber is vulcanized by heating it with sulphur in the presence of a body containing the characteristic carbon-nitrogen group contained in calcium cyanamid.—Harry O. Chute, New York, N. Y.

1,593,385. RUBBER ACCELERATOR AND METHOD OF MAKING IT. This accelerator comprises a mixture of di-phenylguanidine and di-tolylguanidine.—Guy H. Buchanan, Westfield, New Jersey, assignor to American Cyanamid Co., New York, N. Y.

1,594,191. JELUTONG PRODUCT AND METHOD OF MAKING IT. A new jelutong product made by subjecting jelutong latex to evaporation, the dry product representing substantially the total solids of the latex.—Wallace A. Beatty, New York, assignor to Beach Nut Packing Co., Brooklyn, both in New York.

1,594,982. OIL COMPOSITION FOR SATURATING CABLE WRAPPINGS. Impregnating the cable wrapping with a composition comprising a petroleum oil of suitable consistency and a condensation product of a nitrogenous base and a carbonyl body.—Albert A. Somerville, Flushing, assignor of two-thirds to R. T. Vanderbilt Co., Inc., New York, both in New York.

1,594,983. OIL COMPOSITION. An improved petroleum oil composition having combined therewith a small amount of a condensation product of an aldehyde with a nitrogenous base.—Albert A. Somerville, Flushing, assignor of two-thirds to R. T. Vanderbilt Co., Inc., New York, both in New York.

1,595,048. PROCESS OF MAKING RUBBERIZED FIBER COMPOSITION. Fibers are suspended in a rubber solvent, a solution of rubber is added, precipitating the rubber on the fibers which are removed and vulcanized.—Robley H. Morrison, assignor to The Goodyear Tire & Rubber Co., both of Akron, Ohio.

1,595,049. PROCESS OF MANUFACTURING A RUBBERIZED FIBER COMPOSITION. Wood pulp fibers are separated by agitation in a liquid which is a precipitant of rubber, a solution of rubber is added and the rubberized fibers are removed and vulcanized.—Robley H. Morrison, assignor to The Goodyear Tire & Rubber Co., both of Akron, Ohio.

1,595,374. RUBBERIZED FIBER COMPOSITION. The method consists in precipitating a quantity of rubber out of solution, treating the rubber while in suspension with sulphur dioxide and hydrogen sulphide. A quantity of fibers are mixed with the precipitated rubber. The fibers are so strained from the liquid as to effect a mat formation and the mat is dried.—Paul Beebe, assignor to The Goodyear Tire & Rubber Co., both of Akron, Ohio.

1,595,375. RUBBERIZED FIBROUS MATERIAL. Rubberized fiber in a liquid suspension is churned sufficiently to cause the fibers to rise to the top.—Paul Beebe, assignor to The Goodyear Tire & Rubber Co., both of Akron, Ohio.

1,595,414. PRODUCT HAVING CHARACTERISTICS OF HARD RUBBER. Vegetable matter is heated about one hour at 400 degrees F. in a retort with water and an agent which will release the natural gums of the vegetable matter. The treated mass is removed and molded under pressure into the desired form.

1,597,170. UNVULCANIZED RUBBER OBJECTS. Receptacles are molded from fresh coagulum, after which their walls are expanded by means of differential pressure.—A. R. Frans van der Mark, Weltevreden, and Hein Kremer, Meloewoeng, Dutch East Indies.

1,597,233. VULCANIZATION OF RUBBER. A vulcanizable compound is made by mixing rubber, a vulcanizing agent and phenyl-orthe-tolyl-guanidine.—R. V. Heuser, Portsmouth, New Hampshire, assignor by mesne assignments, to Albert C. Burrage, Boston, Massachusetts.

1,597,602. TRANSFER. The layer forming the transfer picture consists of colored rubber mixtures.—Paul Klein, Budapest, Hungary.

1,597,807. UTILIZATION OF RUBBER BEARING PLANTS. A rubber bearing plant is reduced to a plastic mass, dried and vulcanized.—Frank T. Lahey, Akron, Ohio.

1,597,808. VULCANIZABLE PLASTIC MATERIAL. A composition made by grinding rubber on a mill with liquid rubber latex, and emulsified oils.—Frank T. Lahey, Akron, Ohio.

1,597,860. SUBSTITUTE FOR GUT AND OTHER ANIMAL FIBERS. Threads of natural silk are treated with a solution of a gelatinous substance and rubber latex, twisting them and treating them with waterproofing material.—N. B. Maurice and William Frost, Macclesfield, England.

1,597,904. GOLF BALLS. A process of making resilient balls comprises forming a resilient metallic sphere having located within it a mass of uncured rubber and a volatile agent, and by vulcanization converting the mass into sponge rubber.—Otto Kuhlke, Akron, Ohio.

1,598,246. COMBINING LEATHER AND CAOUTCHOUC. The leather is dried for about 24 hours at 50 degrees C. Air is not allowed access to the leather thus dried, and it is treated with a solution of caoutchouc.—Robert Meyer, Hannover, Germany.

1,598,470. DEVULCANIZING VULCANIZED RUBBER. Vulcanized rubber is devulcanized by boiling it with an emulsoid colloid solution. The fiber is treated to make it combine in the form of a colloidal cellulose with the rubber to make a superior quality and increase the yield.—C. F. Willard, San Diego, California.

1,599,282. RUBBER LATEX PLASTIC PASTE. A paste of partially coagulated natural latex is shaped into a rubber article.—C. C. Loomis, Yonkers, and H. E. Stump, Brooklyn, New York.

The Dominion of Canada

262,813. RUBBER COMPOUND. In a process for the production of a solid, spongy compound of rubber and a protein material such as glue, gelatine and the like, which cannot be used for the purposes of adhesion, there are mixed together rubber latex and an alkaline solution of the protein material each heated to about 90 degrees C. The temperature of the mixture is increased to about 100 degrees C. and the latex and protein material are coagulated by the addition of coagulants to the hot mixture.—The Latex Developments Ltd., London E. C. 2, assignee of Robert Russell, Manchester and Herbert Broomfield, Stockport, all in England.

262,927. INSULATING MATERIAL. An insulating and ornamental product is made from slate powder 40 to 70 per cent, rubber 12 to 25 per cent, bitumen 2 to 10 per cent, and coloring matter and vulcanizing material 13 to 25 per cent. The composition is molded, cured and finished.—Cornelius Pickstone, Radcliff, Lancaster, England.

262,973. RUBBERIZING PROCESS. A process for impregnating a water repellant fibrous material which consists in treating the material with an organic polar compound miscible with water, oils, greases and waxes and rubber latex.—The Canadian Consolidated Rubber Co., Ltd., Montreal, Quebec, assignee of Merwyn C. Teague, Jackson Heights, Long Island, New York, U. S. A.

263,012. VULCANIZATION OF RUBBER. A method of vulcanization in which diethylene-diimine is used as the accelerator.—The Goodyear Tire & Rubber Co., assignee of Lorin B. Sebrell, both of Akron, Ohio, U. S. A.

263,153. RUBBER ETCHING PROCESS. A chemical process for etching rubber for obtaining impression prints.—Etienne Sardon, Marseilles, France.

263,237. WATER DISPERSING METHOD. Crude rubber is dispersed by pulling and stretching the mass in water and colloidal clay until dispersion is effected at a temperature below that at which crude rubber is depolymerized.—The Research Incorporated, Boston, assignee of William B. Pratt, Wellesley Hills, both in Massachusetts, U. S. A.

263,238. RUBBER DISPERSION. A process of dispersing crude rubber, or crude rubber compounds, which comprises incorporating in the mass sea-moss jelly, and then adding an aqueous solution of a dispersing agent until the rubber of the mass separates into its constituent globules.—The Research Incorporated, assignee of William B. Pratt, Wellesley Hills, both in Massachusetts, U. S. A.

263,262. VULCANIZED MATERIAL. The process of rubber vulcanization by hydrogen sulphide and sulphur dioxide gases produced by injecting powdered sulphur in steam and air suspension. The rubber is cured by sustained heat and pressure formed by the inclosed expanding gases during the agitation of the mass.—George A. Henderson, Saint Albans, West Virginia, U. S. A.

The United Kingdom

251,961.* WATERPROOFING COMPOSITIONS. A composition for waterproofing fibrous materials, such as paper and fabrics, is made by dispersing a heavy metal saponification product in a water dispersion of rubber with or without the addition of filling and coloring materials.—Naugatuck Chemical Co., Naugatuck, Connecticut, assignee of A. F. Owen, Jackson Heights, Long Island, New York, U. S. A.

251,979.* ELECTROLYSIS OF RUBBER. In the coating of articles by treatment as anode in a dispersion of rubber or a cellulosic or other organic compound, a quantity of zinc, magnesium, cadmium or other suitable metal is introduced into the anode zone to neutralize the oxygen liberated.—Kodak, Ltd., Kodak House, Kingsway, London, assignee of C. L. Beal and L. W. Eberlin, Kodak Park, Rochester, New York, U. S. A.

252,112.* MOLDING COMPOSITION. In fibrous plastic compositions strength and resilience is gained by injecting into the melted mass of other ingredients a solution of rubber which permeates the whole as a net-work of rubber.—A. Poller, 115 Währingerstrasse, Vienna.

252,213.* PUNCTURE CLOSING COMPOSITION. A mixture of clay, glycerine and raw sugar melted together to which is added before cooling a concentrated solution of tartaric acid, and a mixture of pulverized colophony, copal, gum arabic and dextrine.—F. Sarnighausen, 7 Wilhelmstrasse, Lokstedt, near Hamburg, Germany.

252,416. FILLERS. Colloidal suspensions of organic materials bound by colloidal suspensions of color fixing earths such as Fullers earth, Bentonite, etc.—W. Eberlein and Colloisil Color Co., Ltd., Bents Lane, Bredbury, near Stockport, Cheshire.

252,673.* TREATMENT OF MOLDS FOR ELECTRO-DEPOSITION OF RUBBER. Means for hastening electro-deposition of rubber on forms.—Anode Rubber Co., Ltd., 15 Throgmorton Avenue, London.

252,856. INSULATING COMPOSITIONS. Vulcanizable electrical insulating materials are rendered flame proof by admixtures of chlorinated substances and an inorganic substance having relatively high heat conductivity.—Western Electric Co., Connaught House, Aldwych, London. (Western Electric Co., New York, N. Y., U. S. A.)

252,894. FLOOR COVERING. Vulcanized rubber waste is mixed with melted colophony or other natural or artificial resin; cork meal or other filler is added, also ochre or other dye stuff. The mixing is rolled out onto a web of jute.—Lobositzer Akt.-Ges. zur Erzeugung Vegelabilischer Oehle, and P. Slansky, 7 Rosengasse, both in Lobositz, Czecho-Slovakia.

* Not yet accepted.

New Zealand

56,485. PAPER AND PAPER-BOARDS FINISHING. The surface is filmed with liquid dope made from rubber latex associated with sizing and surfacing materials.—George F. Blombery, Longueville Road, Lane Cove, near Sidney, near South Wales.

Germany

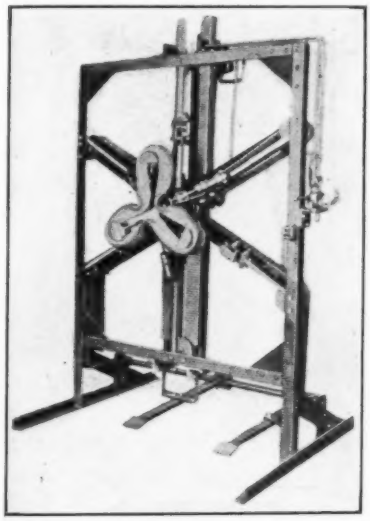
432,894 (September 30, 1923). Method of producing a condensation product of latex that is soluble in water. Mervyn Stanley Stutchbury, London. Represented by Dr. Carl Böhm v. Börnegg. Bockenheimer Anlage 45, Frankfurt a. M. (addition to Patent 419,658. September 30, 1923).

New Machines and Appliances

Airbag Inserting Machine

The difficult job of inserting airbags in tire casings and the cost of replacing bags damaged by twisting and kinking can be eliminated by the use of the machine here illustrated.

In operation, the airbag is placed on three supporting arms, the contact points being smooth wooden blocks shaped to fit the bag. When on its supports the bag is collapsed at three places, as pictured, by other arms fitted with quarter circle metal hinged shoes, each operated by a small air cylinder. The collapsed diameter may be made sufficiently small to permit quick placing of a flat band tire or one formed on a core.

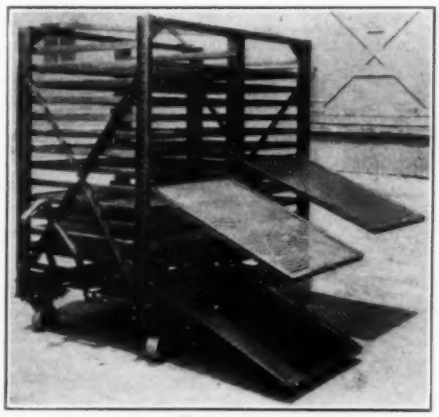


Akron Standard Airbag Inserter

The air cylinders then pull the hinged shoes away from the bag allowing it to expand outwardly against the tire. The three supporting arms then separate radially inserting the bag in the encircling tire.—The Akron Standard Mold Co., Akron, Ohio.

Rubber Batch Truck

The problem of cooling and removing hot rubber batches from the mill room is most efficiently solved by means of the batch truck here illustrated. It is essentially a stiffly framed, portable steel rack accommodating numerous well braced steel trays of woven wire, perforated or plain, sheet metal. The trays can be pulled out full length from the racks and are held in that position by automatic catches, for loading or emptying. The capacity of the truck is 1,000 pounds. It may be moved from mill to stock aging room by any form of tractor to which it may be attached by its safety trailing coupler.



Economic Rubber Cooling Rack

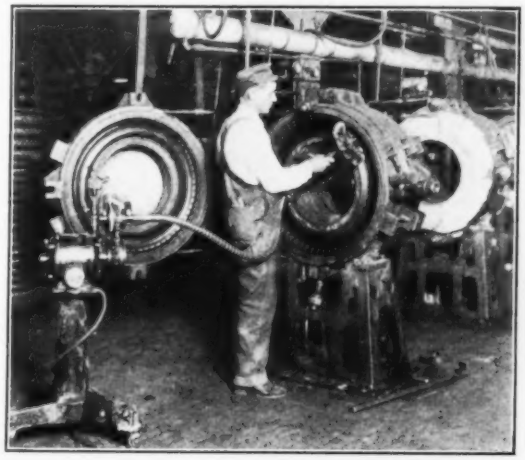
A truck of this sort is particularly valuable for receiving highly accelerated stocks which must be promptly and thoroughly cooled to prevent loss. It should be noted that the mill operator can conveniently load his own truck thus saving the time of one man in the operation.—Economic Steel Rack Co., Everett, Massachusetts.

Essential Mold Cleaning Equipment

Successful manufacture of any rubber product means rigid attention to details, particularly in tires and molded goods. Keeping the molds clean is one of the first requisites. To accomplish this one of the necessary pieces of equipment is the portable wire brush, electrically operated, which can be moved from place to place, thus enabling the equipment to remain in production and to be kept clean at all times.

The accompanying illustration of a mold brush mounted on a floor truck being used to clean tire molds in watch case vulcanizers, shows the accessibility of these new curing units for cleaning, no handling being required as was the case with the flat molds used in hydraulic vulcanizers.

The flexible shaft equipment is available in all types to meet different shop conditions—suspended type, floor truck type, column type (as illustrated) and bench type. It is equipped with a 1 h. p. motor, 3 speeds, 900, 1,800, and 3,600 and is much more economical than the slower hand method.—R. G. Haskins Co., 3450 West Lake street, Chicago, Illinois.



Haskins' Type 7 Mold Cleaning Equipment

Mold Cleaning by Spray Method

Clean molds are just as essential in the manufacture of quality rubber goods as good compounds, but quality rubber goods do not always mean first quality. For instance in third grade heels made from all reclaimed compounds, the molds must be clean so that the medallion and designs do not become clogged and impair the appearance of the product.

Usual practice is to soap the molds after each heat, and sole molds are brushed with a motor driven wire brush. Heel molds will not stand the harsh treatment of the brush so well, as the impressions are much smaller and more easily damaged, so that these are removed from production at intervals and given a strong bath of caustic for removing the accumulated dirt.

A more efficient way of cleaning is to spray the solution on the mold with a spray gun, made especially for this purpose. These

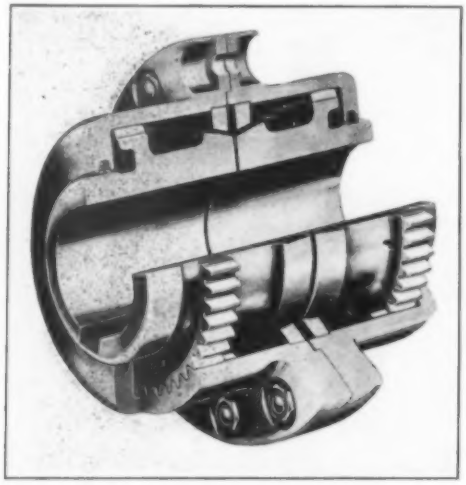
are of several types, with a cup or container attached, or the gun type with which the solution is supplied by gravity from an overhead container. The latter type may be used with a pressure tank from which the solution is forced through hose to the gun where it is atomized at high pressure.

The spray method has the advantage in that the molds can be cleaned more frequently and do not have to be removed from production.—Eureka Pneumatic Spray Co., Richmond Hill, New York.

Flexible Shaft Coupling

There is a popular demand in rubber plants for a reliable flexible coupling that will satisfactorily compensate for the usual errors of shaft misalinement and allow free end float to two connected shafts.

A practical coupling of this type is illustrated here in part sectional view. It consists of six parts, namely, two hubs each



Poole Flexible Coupling

with an external gear meshing with internal gears in two sleeves which are bolted together, and two alining rings which are fitted in the two sleeves. The outer faces of the teeth on the hubs are formed spherically which provides a true self-alining bearing for the connecting sleeve. If the two shafts are out of line the sleeves assume a neutral position with a perfectly formed and lubricated bearing on the spherical surface of each shaft hub. The coupling is lubricated and self-alining without binding action at any point. It is simple in design with unusual strength and complete protection from dust and dirt. It operates equally well in either direction, on continuous or reversing service and at high or low speeds.—Poole Engineering & Machine Co., Baltimore, Maryland.

Reduction Gear Pressure Oiling System

Ordinarily, speed reducers of the worm gear type are lubricated by a splash system. In heavy service at high speed, a pumped supply is preferable, as it insures adequate lubrication under all conditions, and but little power is required to pump and spray the oil, while loss of lubrication, and harmful churning of the oil by the high worm speed, are avoided. The oil is delivered to spray nozzles located on either side of the contact of worm wheel and worm, and to the worm and shaft bearings. The pump is attached to the gear casing and driven from the worm shaft, drawing the oil through a strainer in the oil reservoir in the lower part of the gear casing. The pressure in the oiling system is controlled by an automatic release valve, which saves pumping against excessive head at high speeds.—De Laval Steam Turbine Co., Trenton, New Jersey.

Automatic Rubber Washer Cutter

This machine is designed for cutting rubber washers for garden hose connections, bottle stoppers and similar tubed rubber products. Its cutting capacity is from 95 to 200 pieces per minute from stock varying from ¼ to 1½ inches in diameter. The cuts vary from $\frac{3}{32}$ to ¾-inch in length.

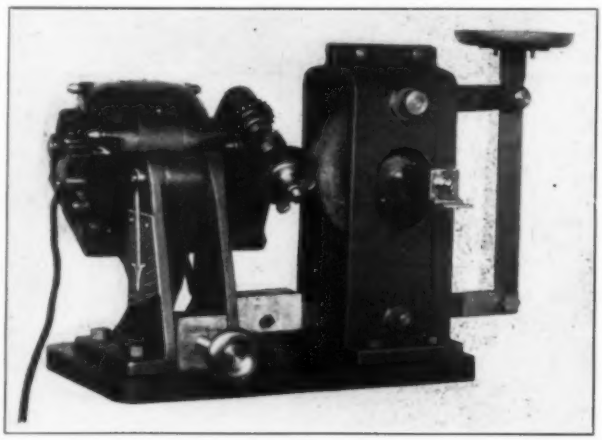
Thropp Washer Cutter

The tubing to be cut is held in a V-shaped holder. It is entered and fed through two bushings. The cutting is effected by a circular knife ten inches in diameter revolving about 2,000 r.p.m. and passing in and out between the bushings. The knife is housed for safety of operation and to carry off the flow of water used on the knife. The machine is compact and supplied with the necessary variety of accessory and change parts for its full range of capacity cutting. It is provided with a grease gun lubricating system.—William R. Thropp & Sons Co., Trenton, New Jersey.

Standard Abrasion Testing Machine

For purposes of comparing the wear or abrasive resisting quality of a tire tread or other stock the machine here pictured has been devised. It consists of a stand supporting a motor which operates an emery wheel against a disk of the rubber being tested. The latter is supported on a shaft in a housing and can be held against the emery wheel with any desired pressure by weights placed in the scale pan. A reset revolution counter is connected with the grinding wheel.

The test conditions are varied by the weight in the pan, and the angle and speed of the emery wheel. The angle is regulated by

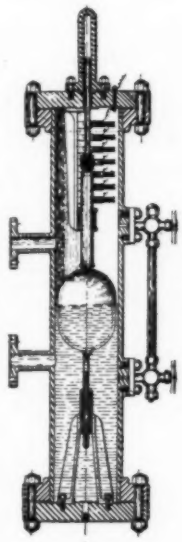


Akron Standard Abrasion Tester

turning the motor about an axis, and can be varied from 0 to 40 degrees. The machine operates by a ⅛ h.p. motor from an electric light circuit.—The Akron Standard Mold Co., Akron, Ohio.

Electric Water Level Indicator

The water level indicator, here pictured, electrically maintains constant water level fluctuations in boiler plants, and permits the reading of the water level accurately, not only from the boiler room floor but at any convenient location in the plant. The construction of the indicator is shown in the sectional view.



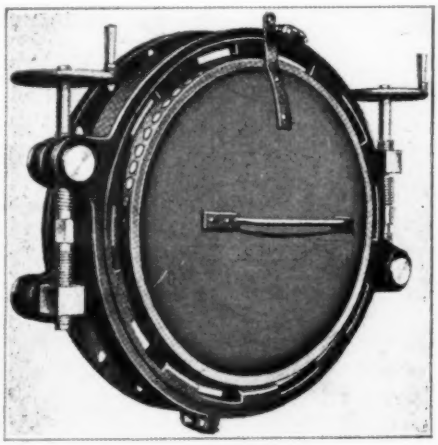
Acme Water Column

The water column of special design contains a forged steel guided float which actuates the indicating device. This device consists of a series of low voltage transformers located in the steam space of the column. These are connected to a corresponding series of lights on a panel which are thus caused to burn dimly. A floating laminated armature, attached to the upper float rod, passing through the transformer fields charges the magnetic circuit and increases the secondary voltage of the neighboring transformer and causes its corresponding light to burn brightly. The apparatus is so located that the central transformer and light will register the normal water level.

The column is built in accordance with the American standard for 400 pounds working pressure and the transformer windings, electrical connections, etc., are designed for operation at the temperature prevailing at this pressure.—The W. B. Connor Co., Inc., 110 West 42nd street, New York, N. Y.

Quick-Acting Vulcanizer Door

An improved quick acting bayonet joint door for vulcanizers is represented in the illustration in which are shown the hand operated screw spindles for opening and closing small doors. For heavier installations two hydraulic cylinders replace the hand screws for operation.



German Bayonet Joint Vulcanizer Door

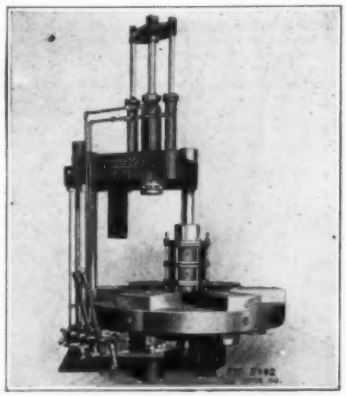
In either case handling of the bayonet joint is very simple. The bayonet slotted steel ring of the door is pressed against the corresponding ring on the vulcanizer and then turned into the interlocking position. Opening and closing can be accomplished in a very few seconds.

This bayonet door will hold against a pressure of 280 pounds per square inch, and is highly regarded in Germany where it is known as the Nimag System of vulcanizer closure.—Nienburger Maschinenfabrik, Nienburg am Saale, Germany.

"Rubber Machinery," by Henry C. Pearson, should be in the library of every rubber company.

Cold Molded Battery Boxes

Molded boxes for storage batteries have practically superseded the hand built container. The cold molded battery box has invaded the field against the hard rubber battery box due to its cheapness and rapidity of production. Composition boxes are turned out at the rate of one per minute on the press here pictured, which is of the turret type with 6 stations, each of which is equipped with a mold. At the first station the mold is charged with the asphaltic composition and an overhead hydraulic plunger drops the core plunger into place. After the one-minute interval the turret revolves 1/6 of a turn bringing the first mold into pressing position at station 2 where 150 tons pressure is applied to finish the box. The material is kept hot during pressing by steam circulating in the jacketed mold. At stations 3, 4, 5 and 6 the boxes are successively cured by steam and chilled by water circulation. They are finished at station 1 at 1-minute intervals and ejected hydraulically, when the cycle begins again. One man and helper handle the press to which the raw materials are furnished in weighed batches by the mixing crew.—The Hydraulic Press Manufacturing Co., Mt. Gilead, Ohio.



Turret Battery Box Press

Process Patents

The United States

1,595,082 Method of making steering wheels. John R. Gammeter, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y.

1,595,203 Doll. Ward Leathers, Haworth, New Jersey.

1,595,312 Molded shoe. William G. O'Brien, assignor to The Goodyear Tire & Rubber Co., both of Akron, Ohio.

1,595,375 Making rubberized fibrous material. Paul Beebe, assignor to The Goodyear Tire & Rubber Co., both of Akron, Ohio.

1,597,432 Uniting two rubber surfaces. Leon B. Conant, Cambridge, Massachusetts.

1,597,801 Manufacturing shoes. Henry Kahlmeyer, Medford, Massachusetts, assignor to United Shoe Machinery Corporation, Paterson, New Jersey.

1,598,383 Making inner tubes. Ernest W. Melvin, Milwaukee, Wisconsin, assignor to The Fisk Rubber Co., Chicopee Falls, Massachusetts.

1,599,054 Rubber sponges. John Lehr, assignor to The Miller Rubber Co., both of Akron, Ohio.

Reissue

16,418 Ball and process of making same. Harry Nye, Akron, Ohio. Filed May 13, 1925. Serial No. 30,121. Original No. 1,458,776, dated June 12, 1923. Serial No. 528,610, filed January 12, 1922.

The Dominion of Canada

263,616 Rubber sheet manufacture. The Latex Developments, Ltd., London, E. C. 2, assignee of Robert Russell, Manchester, and Herbert Broomfield, Stockport, all in England.

264,055 Shoe manufacture. Harry Mavelock Beckwith, Brookline, Massachusetts, U. S. A.

The United Kingdom

253,185 Ornamenting. H. C. Mitchell, 50, Park Road, Regent's Park, London.

253,784 Composite block. H. N. Atwood, Samarkand Farm, East Hill Road, Monson, Massachusetts, U. S. A.

Germany

433,069 (October 11, 1925). Method of producing pictures, figures and designs on rubber surfaces. Siegfried Saul, Dahmengraben 10, Aachen.

Machinery Patents

The United States

1,595,081. TUBE VULCANIZER. A light metal shell designed to contain an endless circular inner tube expanded by fluid pressure, the curing heat being transmitted through the walls of the shell enclosed in an outer steam jacketed mold. The tubular shell renders it possible to accurately position and adjust the tube within it at room temperature. In addition the tube cannot prematurely contact the hot mold as when the tube is inserted directly into it.—Michael A. Flynn, Akron, Ohio.

1,595,312. FOOTWEAR. Porous water-resistant composition is prepared by heating wood, hemp, jute, leather or other fibers in a heater and then thoroughly dispersed in liquid composed of two miscible liquids of which one is a rubber solvent and the other a rubber precipitant such as toluol, alcohol, benzol, acetone. Rubber, dissolved in toluol, is then added and dispersed in the mixture. The rubber is precipitated on the fibers by reducing the temperature of the solution and adding the rubber precipitating agent. The rubber coated fiber pulp is spread by compressed air into layers on the inside of a wire screen shoe form and the shoe is then removed and cured.—William G. O'Brien, assignor to The Goodyear Tire & Rubber Co., both of Akron, Ohio.

1,595,318. DETERMINING THE HYSTERESIS OF RUBBER. Rubber band specimen is mounted over radial pins on an eccentrically revolvable disk which is caused to move or rotate a certain amount because of the difference in the energy required to tension the bands from that returned by their contraction. The degree of movement of the eccentric disk is read by means of an indicating arm traveling around the scale. This angle of travel is used to calculate the hysteresis of the rubber under test.—Jesse W. Shields, assignor to The Goodyear Tire & Rubber Co., both of Akron, Ohio.

1,595,405. METHOD AND MEANS FOR PRODUCING DIAGONAL CORD FABRIC. A previously rubberized cord is continuously formed upon a form into a tubular structure having diagonally extending strands. The tubular structure is slit on opposite sides to produce strips of bias cord fabric of uniform width and indefinite length suitable for forming tire carcasses.—Emanuel Ingham, Washington, District of Columbia.

1,597,154. TIRE-BUILDING MACHINE. The sidewise movement of a fabric strip when being guided by a roller onto a tire carcass or core is counteracted by a guide roller that may be raised and lowered relative to the core to insure a desired degree of tension on the fabric. Additional means are employed for changing the axis of rotation of the guide roller in accordance with the nature of the fabric and maintain the latter in perfect alinement with the core or tire body being built upon.—Walter H. Hermann, assignor to Hermann Tire Building Machine Co., both of Columbus, Ohio.

1,597,458. MACHINE FOR MAKING COMPOSITE WEBS. Means are provided for feeding or supplying the textile strands for the production of cord fabric together with means for feeding bead elements and sheet rubber. Shuttles apply roving successive courses of the textile strands in helical progression around the beads and sheet rubber. The product is then consolidated by roller pressure and a further sheet of rubber is applied and consolidated in place between the beads. The resultant product is fed to the cores upon which tire carcasses are formed.—Howard I. Morris, assignor to The Cord Tire Machine Co., both of Cleveland, Ohio.

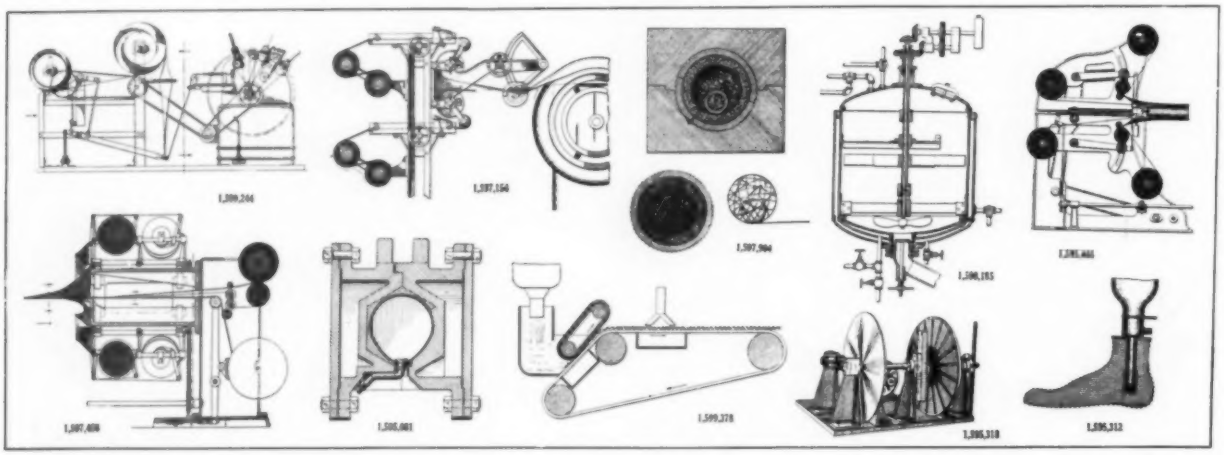
1,597,904. MANUFACTURE OF GOLF BALLS. The ball of the present invention is given resilience and weight by a sphere of tempered steel wire wound in a series of convolutions until a hollow ball is obtaind. The convolutions of wire are opened for insertion of a mass of rubber within the sphere. The rubber is compounded with a volatile substance which upon heating during vulcanization in the usual type of golf ball mold expands to form a rubber sponge.—Otto J. Kuhlke, Akron, Ohio.

1,598,185. DEVULCANIZING KETTLE. This kettle for reclaiming vulcanized rubber scrap is designed to secure more thorough agitation and better treatment of the material, as well as to permit the treated material to be washed in the same vessel. The shell of the kettle is steam jacketed, and provided with both low and high speed stirrers.—C. F. Willard, San Diego, California.

1,599,244. BEAD FLIPPING MACHINE. This utilizes strips of frictioned fabric in continuous lengths for covering tire bead rings. It eliminates the usual interrupted operation of rolling the strip in linings. The sheet fabric passes from the stock spool, is given a quarter turn and passes between 2 guide rollers. It then takes another quarter turn to reverse the position of its sticky face and bring it in position for application to the bead ring.—Joseph E. Perrault and Howard G. Ellis, assignors to Hood Rubber Co., both of Watertown, Massachusetts.

1,599,378. MACHINE FOR MAKING FIBER COMPOSITION. This is designed to provide a tough flexible material of great tearing strength and having good wearing qualities suitable for synthetic leather. Rubber is coated by precipitation upon fibers and the fibrous mass is removed from the dispersing liquid by a screening device which allows the fibers sufficient time to become arranged so as to form a porous water resisting felt.—John T. Charleston, assignor to The Goodyear Tire & Rubber Co., both of Akron, Ohio.

1,595,193 Vulcanizing mold. Ernest Hopkinson, New York, N. Y.
1,595,205 Chuck. Jesse B. McClain, Palmyra, New York, assignor to The Mechanical Rubber Co., Cleveland, Ohio.
1,595,409 Golf ball mold. Robert E. Kerr, assignor of forty per cent to Clarence A. Notman, both of Detroit, Michigan.
1,595,411 Apparatus for molding rubber inserts between leaves of springs. Hugh C. Lord, Erie, Pennsylvania.
1,595,883 Tire spreading machine. Floyd R. Simpson, Mankato, assignor to F. & F. Manufacturing Co., Faribault, both in Minnesota.
1,595,914 Clamp. Emil Nestler, assignor to Nestler Rubber Fusing Co., Inc., both in New York, N. Y.
1,596,476 Repair vulcanizing apparatus. Josef Zängl, Munchen, Germany.



1,596,739 Apparatus for molding heels. Richard F. Kinsley, assignor to Dryden Rubber Co., both of Chicago, Illinois.
1,596,822 Tire repairing tool. Joseph J. Fuchs, Minneapolis, Minnesota.
1,596,823 Tire repairing tool. Joseph J. Fuchs, Minneapolis, Minnesota.
1,597,631 Rubber stock rack. Felix Spindel, Merrisville, Pennsylvania.
1,597,803 Apparatus for filling molds with plastic material. Arthur Richie Kearney and Charles William Taylor, London, England.
1,599,125 Tube vulcanizer. Michael A. Flynn, Akron, Ohio.
1,599,376 Machine for making fiber composition. Claude H. Smith, assignor to The Goodyear Tire & Rubber Co., both of Akron, Ohio.
1,599,384 Machine for making rubberized fibrous material. William G. O'Brien, assignor to The Goodyear Tire & Rubber Co., both of Akron, Ohio.
1,599,385 Machine for making fiber composition. Milton W. Pryor, assignor to The Goodyear Tire & Rubber Co., both of Akron, Ohio.

The Dominion of Canada

263,361 Rubber trimmer. Harry Earnest Wills, North Brookfield, Massachusetts, U. S. A.
263,561 Tire carrier. William J. Volpert, Peru, Indiana, U. S. A.
264,164 Vulcanizing apparatus. The Dill Manufacturing Co., assignee of John C. Crowley, both of Cleveland, Ohio, U. S. A.

The United Kingdom

253,058 Kneading machine. F. Kempter, 10 Heinestrasse, Stuttgart, Germany.
253,224 Impact pulverizer. A. Reed (executor of F. E. Whitham), Waterhouse Chambers, Crossley street, Halifax.
253,418 Means for relieving pressure on rollers of rubber mills. G. Spencer, Moulton & Co., Ltd., 2, Central Buildings, Westminster, W. E. Abbott, 6, William street, Hurstead, Rochdale, and J. R. Elgey, 24, Sutcliffe street, Littleborough, both in Lancashire.
253,506* Apparatus for retreading tires. A. E. Burch, 101, Queen street, Melbourne, Australia.
253,896* Molding press. Naamlooze Vennootschap Philips' Gloeilampenfabrieken, 6 Emmasingel, Eindhoven, Holland.
254,570 Tire mold. R. Barrantes, 3036 Taylor avenue, Kenmore, R. J. Bonstein, 311 Crestwood avenue, and M. A. Replogle, 802 Chalker street, both in Akron, all in Ohio, U. S. A.

* Not yet accepted.

New Zealand

53,898 Liner cutter. William Stephenson Johnson, 60 Albert street, Auckland.

Designs

Germany

956,429 (June 28, 1926). Tool for trimming soft rubber pressed goods. Alois Stettmeier, Planegg near Munich.

New Goods and Specialties

Molded Rubber Doll

INFANTS will not be able to resist the appeal of this attractive little doll, Baby Darling, which may be caressed or spanked with no fear of dire consequences as the toy, being rubber, is unbreakable and will stand up under the hardest usage to which it may be subjected

The doll stands about eight inches high and is made of flesh colored rubber. The face is most lifelike, hand painted in colors which will not run when dollie is washed. This molded toy is of a different type from most rubber dolls and is another product from the toy shop of The Miller Rubber Co., Akron, Ohio. It comes packed in a dainty little container on which are pictured representations of Baby Darling herself.

The same company manufactures a large assortment of inflatable toys, each toy inflated, at the valve, to the size of the character represented, and weighted on the bottom to hold it steady. Prominent among this line are the dapper squawker sheik and his pert flapper sister, a bathing girl and two figures taken from the well known comic strip, Andy and Chester Gump.

Baby Darling

Golf Ball Lifter

This clever device, the Avon Black Dog Lifter, relieves the player of the fatigue of constant stooping and is invaluable for retrieving the ball from awkward hazards such as ditches, behind boundary fences and other inaccessible places. The lifter does not affect the stroke nor does it interfere with the extraction of the club from the bag. To golfers who do not employ a caddy this invention will be most welcome at putting practice.

To attach the lifter to the club, place the ball in the lifter and by a turn of the wrist it is fitted firmly to the handle of the putter, the black rubber suction cap easily lifting any golf ball.—The Avon India Rubber Co., Ltd., 343-5 Euston Road, London, N. W. 1, England.

Avon Black Dog Lifter

Rubber Egg for Setting Hen

While originally designed for amusement, rubber eggs, a recent novelty, may soon prove of utilitarian value. The eggs are of molded sponge rubber with smooth exterior, closely resembling in size and form the eggs of white Leghorn hens. Because of its smoothness, coldness and hardness, objection is made to the old fashioned china nest egg which the hen often flips out of her nest. A rubber egg is regarded as more agreeable because its dull finished surface resembles the natural product, is easily warmed and will not crush the natural eggs when put in a nest with the latter, and should coax even the flightiest hen to become a steady sitter and help fill either crate or coop. Chronic jokers buy them to put in the egg cups of unsuspecting friends with results satisfactory to the party of the first part.

Airships from Toy Balloons

Handy boys are turning out quite good sized dirigibles with the help of The Oak Rubber Co., Ravenna, Ohio, which furnishes them special rubber gas bags for this purpose. Some of these airships are eight feet long and two feet in diameter, the rubber bag inflated with hydrogen and kept on even keel by the light wood frame and car underneath. The "motor" is an extra strong rubber band wound up many hundred of turns which will keep the big toy sailing round and round for an hour.

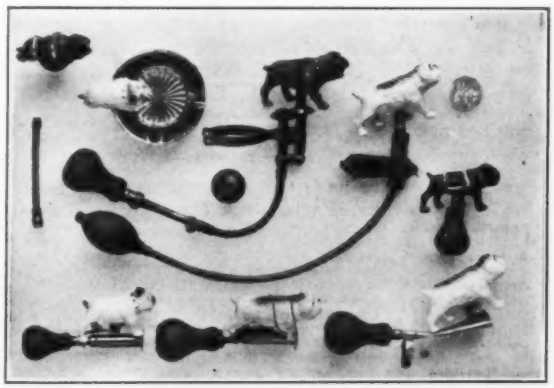
Hospital Water Bag

Fitted with slotted tabs so that it can be fastened in any desired position, Wearever hospital water-bottle is the outcome of a demand by doctor, nurse and patient. Its construction provides for its being tied in position wherever it is put and best of all it will stay in place. The bottle is molded in one piece, is non-blooming and has a smooth surface. The manufacturer of this article is The Faultless Rubber Co., Ashland, Ohio.

Body-Fit Service Bottle

Novelty Barking Dogs

Dogs which bark and do the Charleston are the novel "Pawood" Radio Devil Dogs illustrated, a product of the P. A. Wood Co., 243 Fosdick avenue, Brooklyn, New York. They are designed for use as well as novelty and may be mounted on any part of an automobile, motorcycle, bicycle or toy automobile, and also add to the fun at parties, mardi gras celebrations, etc. When used at the rear of an automobile as a direction or warning signal or horn, the dog may be operated manually or automatically, turning to right or left, up or down at the will of the operator and doing the Charleston in fine style between times. The motion and barking of the dog is effected by means of a rubber bulb of standard hydrometer size, which is squeezed as desired.



"Pawood" Radio Devil Dogs

Whippet Balloon Tire

This 27 by 4.40 balloon tire is adapted to the Overland Whippet which uses the 25 by 3½ straight-side rim as standard equipment for this tire. The rim does not differ in cross sectional dimensions from any of the standard 3½ inch rims, its only difference being in diameter size. The popularity of this tire may be gaged by the fact that it has been used on about forty thousand cars during the past year. It is manufactured by the Firestone Tire & Rubber Co., Akron, Ohio.

Firestone Whippet

Rubber Doughnut

Most realistic and tempting does the rubber doughnut look and almost any lover of this form of pastry will bite into it without hesitation only to find his mistake when he attempts to masticate it. It is covered with a fine white powder, in imitation of the real article.

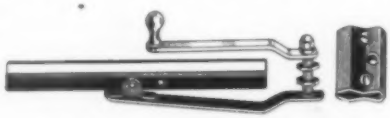
British Water Novelty

A portable raft which floats on air cushions with cross, jockey and under-water swing seats, the Sea Spider will neither dive, capsize nor sink. It is easily and quickly assembled, taken apart and carried without using pump or tools. The air bags are made of rubberized, gas proofed, balloon fabric, the inflation being done by breath only. The stock pattern includes three seat sections and two canvas seats, level or looped, and a suspension can be made over the sides to support bathers. The raft is easily towed or paddled by bathers or other craft, a Japanese sunshade serving as a sail. The whole space may be filled in by sections or canvas strips for a full punt raft which will hold the weight of a dozen persons. Provision can be made for screening with corner supports which may be converted into legs for a beach table, with the raft inverted.—C. G. Spencer & Sons, Ltd., 56 A Highbury Grove, London N 5, England.

Sea Spider Portable Raft

Universal Windshield Cleaner

A high grade cleaner made to last which is positive in action, and the length of the sweep adjustable. The cleaner is attached by drilling a hole through the top of the windshield or by clamping the extra bracket to the top of the windshield. By turning the hexagon nuts that are on the threaded brass sleeve, the pressure of the rubber may be independently adjusted. In order to insure long life, the rubber is of extra heavy quality, the rubber holders of heavy steel and the front and back arms of tempered spring steel. The cleaner fits any make or style of car and comes in two sizes, single and doube. Manufactured by the Monarch Tool & Machinery Co., 522 South Clinton street, Chicago, Illinois.



Cleaner with Adjustable Sweep

Pneumatic Dust Collecting System

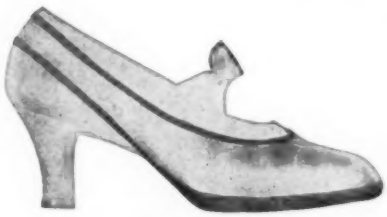
A distinctly new type of heavy duty portable vacuum cleaner for institutional and industrial service has recently been placed on the market by Allen & Billmyre Co., Inc., Grand Central Palace, New York, N. Y. The accompanying illustration shows the general design of this machine which is made in two sizes with one-half and three-fourths horsepower motors, respectively.

These machines are exceptionally light in weight, therefore, readily portable; in fact, may be taken up or down stairs by one person without any great difficulty. They are equipped with rubber tired wheels and a length of rubber vacuum hose is supplied with each machine, together with a set of cleaning tools for various kinds of work, such as cleaning carpets, floors, walls, overhead piping, mattresses, clothing, automobile interiors, etc.

Portable Vacuum Cleaner

Bright Colored Footholds

One of the newest developments in featherweight footwear, Pumpettes, has just been announced by The Miller Rubber Co., Akron, Ohio. They can be rolled up and carried in the handbag, thus keeping milady prepared for any wet weather emergency which may arise, and combine protection against wet, muddy streets and sidewalks with a dainty glove fitting effect which adds rather than detracts from the appearance of the foot. The Pumpettes are washable inside and out and will not spoil the daintiest footwear. They may be secured to match the popular colored slippers, shoes and hose.



Miller Pumpettes

Recoil Pad

Hunters with the most sensitive shoulders can shoot continuous heavy loads without unpleasant results by using the Hawkins recoil pad, the truss formation between the two walls forcing the gun to move straight back and not up or down when pressure is brought upon it. The pad is made of soft, pliable red rubber, 1⅛ inches thick, the rounded top vulcanized to a black hard rubber base. It is made in two sizes, all that is necessary to equip and fit any gun stock on the market.

Hawkins Recoil Pad

Users of high powered rifles claim also to have experienced relief after attaching one of these recoil pads.—The Cushion Pad Corporation, Sioux Falls, South Dakota.

Swimming Sleeve

For sport and safety in the water, the Evans Safety Swimming Sleeve is extremely popular on the coast with both the amateur and expert swimmer. Because they make longer swims possible, life guards wear them; and for the canoeists they are a safeguard against swift, treacherous streams and stormy lakes. The sleeve

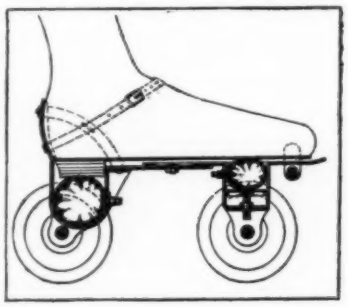
is a buoyant waterproof band, easily filled with air, which encircles the arm above the elbow, slipping on loosely like the arms of a coat. The band is not inflated until after it is adjusted, the seam between the arm and body with valve on top, when it is inflated by mouth and only enough to comfortably sustain the body in the water in any position. These sleeves are made in four sizes;

Evans Safety Swimming Sleeve

junior which sustains a person weighing up to 100 pounds; medium, 150 pounds; large, 200 pounds; and special sizes sustaining a weight of 240 pounds.—The Par Rubber Co., Bowling Green, Ohio.

Balloon Skates

As shown in the illustration, the construction of these skates is such that ease of motion is assured, the heel and ball of the foot resting on inflated balloons; these balloons also prevent slipping by holding the foot securely within the skate instead of merely on the top as on the ordinary skate. The balloons can be refilled with air at the valves which are easily accessible at the side of the skate. The inventor of these skates is John Rohdiek, 53 Stanvois street, Brooklyn, New York.



Skates with Air Cushions

Children's All-Rubber Galosh

This new waterproof galosh for children is all-rubber, the upper made in one piece so that it cannot leak. It is light in weight, the manufacturer claiming that it is no heavier than a cloth top arctic and is easily cleaned with a wet cloth. The galosh is fleece lined throughout, insulated for foot health and has a thick fleece lining and heavy wool insoles between the rubber and foot. An extra full bellows pocket makes it easy for children to put on and take off. There is a dull finish to the overshoe and the expert lasting gives it a trim appearance. The manufacturer is the Hood Rubber Products Co., Inc., Watertown, Massachusetts.

Waterproof Overshoe

Doll Atomizer

From Czechoslovakia come novelty atomizers in the form of dolls. The perfume is introduced into the body of the atomizer by means of a tube which is hidden from view by the head of the doll, a cork in the head hermetically sealing the liquid in the inlet tube. The perfume issues from the mouth of the doll when the rubber bulb is squeezed. These atomizers stand about seven inches high, and come in two models, a little Dutch girl and a little Dutch boy.—Firma Bruder Rachmann, Haida, Czechoslovakia Republic.

Dutch Girl Atomizer

Special Shoes for Dempsey

When Jack Dempsey stepped into the arena at Philadelphia to defend his title as heavyweight boxing champion of the world, he was wearing a pair of shoes especially designed and made for him by the Golden Sporting Shoe Co., Brockton, Massachusetts. The shoes were of yellow, unstretchable kangaroo leather with a counter of rubber composition. They were unlined, with a sole of quilted elk skin, the quilting arranged to prevent slipping.

Rubber Lined Barrel and Rubber Faced Paddles

The Patterson Foundry & Machine Co., East Liverpool, Ohio, has introduced an impact pulverizer which includes, among other novel features, the replacement of the usual iron or steel lining with a soft rubber lining and soft rubber faces on the blades. It is said that the liner and paddle facings wear ten times as long as tool steel for the soft rubber is resilient and does not abrade. When renewal is necessary, they can be replaced at a fraction of the cost of steel and with but a small part of the labor required to install steel blades and liners.

All-Rubber Sportsman's Boot

This boot should be in every sportsman's outfit because of the great variety of uses to which it may be applied: for running and climbing it is excellent and, because of its light weight, it is a very desirable shoe for the volunteer fireman as it can be put on and fastened in three seconds. Trappers, hunters and guides will find it most comfortable and suitable for them in their various occupations.

The boot is all-rubber, with hookless fastener, and is made of a special compound twice as tough as that used in other rubbers. The sizes run from 6 to 11, medium width.

A repair outfit is given with each pair of these shoes, consisting of a waterproof dressing and rubber repair patches with cement for applying. The distributer of this footwear is L. L. Bean, Freeport, Maine.

Zipper Trapping Shoe

The Editor's Book Table

Book Reviews

"CHEMISTRY IN THE WORLD'S WORK." By Harrison E. Howe. D. Van Nostrand Co., New York, N. Y. Cloth, 6 by 9 inches, 244 pages. Indexed. Illustrated.

THE author has so happily conceived this admirably instructive volume that it will interest scientific readers as well as laymen. Both will find it a most fascinating revelation of the dependence of modern civilization on the results of chemical research. It is safe to say that chemists and technologists of every degree of attainment will find in this book satisfaction and encouragement in their work.

The intimate contact of the author with the current progress of American chemistry is reflected in the scope and treatment of the subjects discussed. The close contact of chemistry with daily living is indicated by the chapter headings which include (1) Solitude; (2) Mental Isolation; (3) Allies of the Sun; (4) Food and Famine; (5) Contributions of Chemistry to Cloth and Clothing; (6) Decoration—Escape from Monotony; (7) Metals, the Master; (8) Materials of Construction; (9) Permanency of Possessions; (10) Health and Sanitation; (11) Power; (12) Abolition of Drudgery; (13) Chemistry in National Defense; (14) Chemistry, a Tool; (15) Analysis and Synthesis; (16) The Trend and Purpose of Modern Research.

"THE BLACK ART OF RUBBER COMPOUNDING," Chart No. 12. Binney & Smith Co., 41 East 42nd street, New York, N. Y. Paper, illustrated, 15 pages, 5 by 8 inches.

This pamphlet on practical compounding is one of a practical series issued by this company. It contains an illuminating article based on the records of a year's tests of a series of tire tread stocks containing whole tire reclaims in varying proportions in which the use of Micronex to fortify the abrasive wear of reclaim is convincingly pictured by many graphs on the Wiegand standard rubber test form. The details composition of seven test stocks are given.

New Trade Publications

"EFFECT OF AGE-RITE IN VARIOUS COMPOUNDS." R. T. Vanderbilt Co., 50 East Forty-second street, New York, N. Y. These 14 pages of loose leaf data cover the effect of Age-Rite in typical stocks, such as treads, friction, inner tube, shoe soling, pure gum, code wire insulation and certain cheap mechanical mixings. The tables are indexed and present a wealth of valuable data.

"RECORDING VOLTMETERS." AN ILLUSTRATED PUBLICATION OF twenty-three pages, descriptive of some of the products of the Bristol Co., Waterbury, Connecticut, which specializes in the manufacture of recording instruments.

AN ILLUSTRATED BOOKLET IS BEING SENT OUT TO THE TRADE BY The Patterson Foundry & Machine Co., East Liverpool, Ohio, an organization engaged in the manufacture of mills for fine grinding.

AN ILLUSTRATED CATALOG OF THIRTY-TWO PAGES IS BEING ISSUED by the Mueller Steam Specialty Co., Inc., 502 West 126th street, New York, N. Y., manufacturer of steam, water, air, gas, oil, engineering and plumbing specialties.

HOUSE ORGANS AND TRADE BULLETINS HAVE BEEN RECEIVED AS follows: "The Wingfoot Clan," published by The Goodyear Tire & Rubber Co., Akron, Ohio; "C T C Mixing Mill," the Columbia Tire Corporation, Portland, Oregon; and "The Mohawk Magazine" and "The Mohawk Messenger," The Mohawk Rubber Co., Akron, Ohio.

Abstracts of Recent Articles

INDUSTRY FINDS A NEW TOOL—X RAYS.—D. H. Killeffer, *Industrial & Engineering Chemistry*, June 1926, 577-580. Illustrated.

ANTI-OXIDANTS AND THEIR RETARDING ACTION IN THE DETERIORATION OF RUBBER.—L. E. Weber, *Industrial & Engineering Chemistry*, September, 1926, 963-4.

ARTIFICIAL LEATHER. Description of the manufacturing process of making pyroxylin artificial leather.—G. C. Given, *Industrial & Engineering Chemistry*, September, 1926, 957-8. Illustrated.

CHANGES IN THE RUBBER INDUSTRY DURING THE PAST FIFTY YEARS. A review.—George Oenslager, *Industrial & Engineering Chemistry*, September, 1926, 902-5. Illustrated.

RECLAIMING RUBBER FROM TIRE STOCK. Description of alkali process.—Anonymous. *Chemical & Metallurgical Engineering*, September, 1926, 527-8. Illustrated.

THE SWELLING OF RUBBER AND THE CHEMICAL CONSTITUTION OF THE SOLVENT.—J. Salkind, *Berichte der Deutschen Chemischen Gesellschaft*, 59B, 525 (1926).

MEASUREMENT OF CONSISTENCY AS APPLIED TO RUBBER-BENZENE SOLUTIONS.—W. H. Herschel and Ronald Bulkley, *Proceedings American Society for Testing Materials*, 1926, Preprint No. 82, 9 pages.

SIMPLE CHEMICAL ANALYSIS OF RUBBER.—C. J. Enklaar, *Chemisch-Weekblad*, 23, 209-10 (1926).

SOME REMARKS ON THE DETERMINATION OF SULPHUR IN VULCANIZED RUBBER.—E. Kahane, *Le Caoutchouc et la Gutta Percha*, 23, 13154-5 (1926).

ACCELERATION OF VULCANIZATION IN THEORY AND PRACTICE. II. A survey of accelerators of technical importance at the present time.—F. Emden, *Kautschuk*, 110-3 (1926).

HARD RUBBER IN CHEMICAL TECHNIC. Descriptions of solid rubber and rubber coated appliances.—Franz Druckenmüller, *Apparatebau*, 38, 149-51 (1926).

APPLICATION OF DISINFECTANTS USED IN THE CULTIVATION OF RUBBER. Various types of tar or tar preparations are described together with methods for their examination in the laboratory and on the tree.—A. Steinmann and J. J. B. Deuss. Communications of the Central Rubber Testing Station, Buitenzorg, Java, 1926 (3) 159-197; *Archief Rubber Cultuur*, 1926 (5).

SPECIFIC GRAVITY OF HEVEA LATEX.—V. O. de Vries Communication of the Central Rubber Testing Station, Buitenzorg, Java, 1926 (53), 1.23; *Archief Rubber Cultuur*, 1926 (1).

PRESERVATION OF RUBBER LATEX WITH AMMONIA COMBINED WITH OTHER MEANS.—O. de Vries Communication of the Central Rubber Testing Station, Buitenzorg, Java, 1926, (2) 149-157; *Archief Rubber Cultuur*, 1926 (4).

NATIVE RUBBER. A summarized report on the examination of 253 samples of native rubber from various parts of the Outer Provinces of the Dutch East Indies.—W. Spoon. Communication of the Central Rubber Testing Station, Buitenzorg, Java, 1926, (54), 20-106; *Archief Rubber Cultuur*, 1926 (2).

MOLECULAR MAGNITUDE OF CAOUTCHOUC AND GUTTA PERCHA.—F. Ott, *Naturwiss*, 1926, 14, 320; *Chemisches Zentralblatt*, 1926, 1, 3400.

THE RESISTANCE TO EXTENSION OF VULCANIZED RUBBER. A mathematical analysis.—R. Ariano, *India Rubber Journal*, August 14, 1926, 271-274.

MECHANICAL TECHNOLOGY OF EBONITE. Rough and fine polishing.—Anonymous. *India Rubber Journal*, August 28, 1926, 341-3; September 4, 1926, 375-6.

IS THERE A SUBSTITUTE FOR AMERICAN CARBON BLACK? A comparison of the relative effects of carbon black and lampblack on the tensile properties. The answer is that as yet there is no rubber

ingredient that is comparable with true carbon black as a reinforcing ingredient for rubber compounding.—W. B. Wiegand, *India Rubber Journal, September* 4, 1926, 385-8. Graphs.

ELASTIC PROPERTIES OF CRUDE RUBBER IN RELATION TO ITS DENSITY.—M. Kroger, *Gummi-Zeitung*, July 23, 1926, 2373-76, Graphs.

TESTING CORD FABRIC VARIABILITY.—Joseph Rockoff, *Rubber Age*, N. Y. July 25, 1926, 351-2.

VULCANIZATION AND ACCELERATORS, Part II, Serial.—Andre Dubosc, *Rubber Age*, N. Y., July 25, 1926, 353-4.

THE ABSORPTION OF WATER BY RUBBER.—C. R. Boggs and J. T. Blake, *Rubber Age*, London, August, 1926, 242-246. Graphs.

EFFECT ON MECHANICAL PROPERTIES OF THE FORMATION OF COLLOIDAL PRECIPITATES DURING VULCANIZATION OF RUBBER.—G. Martin and W. S. Davey, *Rubber Age*, London, August, 1926, 247-8.

NATURAL AGING TESTS. Results of tests on samples of rubber coagulated with silico-fluoride and vulcanized. March 26, 1922.—Henry P. Stevens, *Rubber Growers' Bulletin*, July, 1926, 345-6.

NEEDLE FORM OF THE CAOUTCHOUC MOLECULE AS A PRACTICAL STRUCTURE THEORY. The hypothesis is advanced that the rubber molecule consists of a chain of which the length is expressed by x in the formula $(C_5H_8)_x$, and is of the order of 14 times the diameter. The properties of raw rubber and the changes induced by physical manipulation and by vulcanization are considered from this point of view.—E. Lindmayer, *Gummi-Zeitung*, 1926, 40, 2261-62.

THERMODYNAMICS OF THE JOULE EFFECT IN RAW RUBBER. The hysteresis diagrams for a sample of raw smoked sheet rubber on first and second extensions have been constructed from data obtained with a specially modified Schopper machine, and the values compared with those obtained for the same sample after vulcanization.—Lothar Hock and S. Bostroem, *Kautschuk*, 1926, 130-136.

PREVENTION OF LEAD POISONING IN INDUSTRY. I, RUBBER INDUSTRY. The method adopted, by which the manufacturer supplies to the rubber goods factories a mixture of 80 parts of the lead compound with 20 parts of rubber or wax in the form of thin sheets which do not give rise to dust, has proved very successful in preventing poisoning in the latter factories.—C. A. Klein, *Journal Industrial Hygiene*, 1926, 8, 296-299.

INHIBITING AGENTS IN OXIDATION OF UNSATURATED ORGANIC COMPOUNDS. By measurement of the volume of oxygen absorbed the authors have examined the effect of numerous substances on the atmospheric oxidation of oils and fats, fatty acids, soaps, and rubber. Active inhibitants may be divided into two main groups, powerful reducing agents such as stannous compounds, sodium thiosulphate, etc., and strong bases, particularly amines.—O. M. Smith and R. E. Wood, *Industrial & Engineering Chemistry*, 1926, 18, 691-694.

ON RUBBER-NITROSITE-NITROSATE SOLS.—Karl Fischer, *Gummi-Zeitung*, August 20, 1926, 2587-2588. Tables.

NEW DEVICE FOR MEASURING THE THICKNESS OF RUBBER SHEETS.—*Gummi-Zeitung*, August 20, 1926, 2588-2590. Diagrams.

AGING PROTECTOR FOR SULPHUR-CHLORIDE VULCANIZATIONS.—Dr. Werner Esch, *Gummi-Zeitung*, August 13, 1926, 2536-2537.

THE TUBING-MACHINE AS AID IN THE PRODUCTION OF PARTLY AND ENTIRELY FINISHED GOODS.—*Gummi-Zeitung*, August 6, 1926, 2480-2482. Diagrams.

THE ROAD PROBLEM IN RELATION TO RUBBER TIRES ON HEAVY MOTOR VEHICLES.—Raffaele Ariano, *Ingegneria*, June, 1926, Illustrated. Italian.

CONSISTENCY MEASUREMENTS OF RUBBER-BENZOL-SOLUTIONS.—Winslow H. Herschel and Ronald Bulkley, *Kolloid Zeitschrift*, August, 1926, 291-300. Tables, graphs.

THE BUDDING OF RUBBER. The Present Position.—F. A. Stockdale, *Tropical Agriculturist*, July, 1926, 3-6. Tables.

Legal Decisions

Customs Appraisers' Decisions

No. 387.—Protests 33235—G. etc., of S. S. Kresge Co. (New York). Rubber balls classified as toys at 70 per cent ad valorem under paragraph 1414, tariff act of 1922, are claimed dutiable at 30 per cent under paragraph 1402. Opinion by Sullivan, J. On the authority of United States v. Stewart (12 Ct. Cust. Appls., 533; T. D. 40734) and Abstract 50067 the rubber balls in question were held duitable under paragraph 1402 as claimed.—*Treasury Decisions*, Volume 50, No. 10, page 20.

APPEALS TO UNITED STATES COURT OF CUSTOMS APPEALS

Suit 2796.—Legality of Reappraisement of Rubber Balls.—United States v. Julius Schmid (Inc.). In this case the Government contends the board erred in holding the finding of value of rubber balls by the general appraiser and the reappraisement board was without evidence and therefore illegal and void. Appeal from G. A. 9133 (T. D. 41598).—*Treasury Decisions*, Volume 50, No. 6, page 23.

DRAWBACK

SANITARY GARMENTS.—Manufactured by I. B. Kleinert Rubber Co., New York City, with the use of imported silk and cotton piece goods, dyed for its account by the United Pierce Dye Works of Lodi, New Jersey, or other dyers operating under established drawback rates, and rubberized by the manufacturers under the provisions of T. D. 40248 (B) of June 13, 1924. Rate effective on and after April 30, 1926.

The drawback allowance shall not exceed the duty paid, less 1 per cent thereof, on the imported material contained in the exported garments, as shown by the abstract from the manufacturing records provided for above.—*Treasury Decisions*, Volume 50, No. 2, page 4.

Patent Suits

1,123,180, J. S. Day, Recoil pad for gunstocks, decree of District Court of South Dakota affirmed June 5, 1926, C. C. A. (8th Cir.), Doc. 7169, W. R. Jorgenson v. F. D. Hawkins.—*Official Gazette*, Vol. 349, p. 471.

1,389,440, B. De Mattia, Collapsible core, order dismissing bill without prejudice on stipulation of parties June 16, 1926, D. C., N. D. Ohio (E. Div.) Doc. 1625, De Mattia Bros., Inc., v. The Kuhlke Machine Co.—*Official Gazette*, Vol. 349, p. 719.

1,490,468, O. J. Kuhlke, Collapsible core, bill dismissed without prejudice on stipulation of parties June 16, 1926, D. C., N. D. Ohio (E. Div.), Dec. 1290, The Kuhlke Machine Co. v. The Miller Rubber Co.—*Official Gazette*, Vol. 349, p. 719.

927,266, A. J. Michelin, Means for securing tires of automobiles and other vehicles, suit filed June 30, 1926, D. C., N. D. Ohio (E. Div.), Doc. 1958. A. J. Michelin et al, v. Firestone Steel Products Co.—*Official Gazette*, Vol. 349, p. 963.

1,279,936, Re. 15,755, R. H. Taylor, Inflated ball, suit filed June 26, 1926, D. C. Massachusetts, Doc. E. 2690, The Seamless Rubber Co., Inc., v. Stall & Dean Manufacturing Co., Inc.—*Official Gazette*, Vol. 350, p. 5.

1,399,118, 1,469,272, W. H. Hermann, Tire-building machine, case dismissed without prejudice June 25, 1926, D. C., N. D. Ohio (E. Div.), Doc. 1641, The Hermann Tire Building Machine Co. v. The Mason Tire & Rubber Co.—*Official Gazette*, Vol. 350, p. 6.

NORWAY AS A MARKET FOR RUBBER FOOTWEAR

Owing to climatic conditions there is a good demand in Norway for rubber overshoes, while rubber or composition soles and heels are also popular. The manufacturers of the country supply about 50 per cent of the overshoes, Sweden furnishing most of the remainder. The American type of rubber shoe is not popular, as it is considered too limp. Rubber heels, however, are becoming more and more used, and approximately 80 per cent of these are of American manufacture.

The Obituary Record

President American Hard Rubber Co.

Frederic G. Achelis, president of the American Hard Rubber Co., New York, N. Y., died at his home in Greenwich, Connecticut, Saturday, September 18, 1926.

Mr. Achelis was the son of the late Fritz Achelis and was elected president of the company after the death of his father in 1924. He was born in Brooklyn, New York, on March 14, 1885, graduated from Hill School and Yale University, Class of 1907.

The same year he entered the employ of the American Hard Rubber Co., spending much of his time studying the technical phases of hard rubber manufacture and industrial management. Through his early efforts a complete reorganization of the entire business was effectually developed. Within a short time he was elected assistant secretary and a director of the company and served as general manager from 1918 to 1925.

Many of the progressive policies adopted by the company during the past fifteen years were the direct result of his plans and management. Notable among these were the adoption of a general trade mark followed by extensive advertising for the well-known Ace brand of hard rubber combs and the marketing of Radion products in the radio industry.

Mr. Achelis was a close student of the economic side of business and devoted his abilities and experience to the hard rubber business, exclusive of any outside interests.

He was married in 1913 to Miss Helen Bruff who survives him with three children, Audrey, Frederic and Gertrude Achelis.

Hermann Hohendahl, Sr.

On August 17, 1926, the founder of the well-known firm of H. Hohendahl, Gummi- und Asbest-Gesellschaft m. b. H. Essen, Hermann Hohendahl, senior, died at Essen-Rüttenscheid after a prolonged illness, at the age of 77 years.

The deceased, a pioneer of the rubber goods business and a man of unusual energy and creative power, was born on April 17, 1849, near Essen. On January 1, 1875, that is almost 52 years ago, he established a rubber specialty business in Essen which rapidly expanded. In 1913 a raincoat factory was built. In 1912 the firm was reorganized and the direction passed out of the hands of the senior partner into those of his son Dr. Hermann Hohendahl and Paul Bachmann.

TIRE AND TUBE PRODUCTION INCREASES

According to statistics prepared by the Department of Commerce in its biennial census of manufactures, there were 58,784,073 automobile tires manufactured during 1925 in the United States, a gain of 29.4 over the 1923 production, while the value of the 1925 production, at $656,491,733, represented an increase of 43.3 per cent over 1923. The tabulation following indicates important advances in all items, except the number of establishments.

	1925	1923	Percentage Increase or Decrease (—)
Number of establishments	126	160	—21.2
Wage earners—average number	81,670	73,963	10.4
Total value of products	$824,548,604	$569,130,559	44.9
Pneumatic casings. *Number*	58,784,073	45,425,591	29.4
Pneumatic casings. *Value*	$656,491,733	$458,107,709	43.3
Inner tubes. *Number*	77,387,836	57,229,225	35.2
Inner tubes. *Value*	$118,234,658	$74,982,725	57.7
Solid truck. *Number*	1,035,226	944,337	9.6
Solid truck. *Value*	$43,870,387	$29,060,586	51.0

ACCORDING TO *Commerce Reports*, THE PANABUTAN LUMBER & Plantation Co. has been incorporated in Zamboanga, in the Philippine Islands, at 1,000,000 pesos. The new organization has been established for developing rubber production, according to announcements.

Rubber Trade Inquiries

The inquiries that follow have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The Editor is therefore glad to have those interested communicate with him.

NUMBER	INQUIRY
865	Source of supply for stockinet fabrics for rubber trade.
866	Surgical rubber articles and rubber goods used in sporting goods for foreign importer.
867	Makers of golf ball winding machine.
869	Manufacturers of magnesium chloride.
870	Stamping machine for cutting out flooring.
871	Electrical vulcanizing machines.
872	Apparatus for accelerated aging test.
873	Source of supply for rubber centers, cover stock and rubber thread used in making golf balls.
874	Manufacturers of machines for inserting and removing airbags from tires.
875	Source of supply for rubber latex.
876	Purchasers of rubber cut from tires, without any fabric; cord and fabric and skivings without rubber; beadless tires and dykes; second cuttings.
877	Source of supply for concentrated rubber latex.
878	Makers of cold patches and rubber cement.

Foreign Trade Opportunities

For further information concerning the inquiries listed below, address United States Department of Commerce, Bureau of Foreign and Domestic Commerce. Room 734, Custom House, New York, N. Y.

NUMBER	COUNTRY AND COMMODITY	PURCHASE OR AGENCY
21,839	Turkey. Rubber overshoes	Agency
21,848	China. Garden hose	Purchase
21,857	India. Rubber tires for carriages, pure and insertion rubber sheets, matting, garden hose, tubing, washers, etc	Purchase
21,881	Sumatra. Canvas rubber-soled shoes	Purchase and Agency
21,882	India. Surgical gloves	Agency
21,958	Brazil. Mechanical rubber goods	Agency
21,992	Norway. Canvas rubber-soled shoes, overshoes, and rubber heels	Agency
22,016	Australia. Elastic webbing	Purchase
22,019	Uruguay. Rubber articles	Agency
22,025	Austria. Rubber goods, especially shoes and waterproof clothing	Agency
22,104	Nova Scotia. Automobile tires, and repair material	Agency
22,118	Australia. Ebonite battery boxes and lids, without handles	Purchase
22,119	Japan. Rubber sheeting	Purchase
22,137	Egypt. Automobile tires	Purchase and Agency
22,138	Australia. Automobile tires	Purchase
22,139	Esthonia. Automobile tires for small and medium-sized cars	Purchase and Agency
22,140	Finland. Toy balloons	Purchase
22,141	Spain. Belting for automobiles and industries, rubber in sheets and slabs, and rubber cement	Agency
22,142	Bulgaria. Rubber shoes, gaiters, and football bladders	Agency
22,150	England. Bathing caps and shoes	Agency
22,187	Germany. Elastic bands	Purchase
22,188	Netherlands. Automobile tires (seconds)	Purchase
22,204	Spain. Rubber in sheets for automobile tires	Purchase

Foreign Trade Circulars

Special circulars containing foreign rubber trade information are now being published by the Rubber Division, Bureau of Foreign and Domestic Commerce, Washington, D. C. The publications which give details of the rubber industry in some one country are marked with an asterisk.

NUMBER	SPECIAL CIRCULAR
1250	"Crude Rubber News Letter."
*1253	"Canadian Tire Exports During July, 1926."
1254	"Mechanical Rubber Goods Exporters' Monthly News Letter."
1255	"Rubber Specialties Weekly News Letter."
1256	"Crude Rubber News Letter."
*1262	"British Exports of Automobile Casings During July, 1926."
1266	"Rubber Footwear Exporters' Monthly News Letter."
*1267	"French Tire Exports During July, 1926."
*1271	"August Imports of Rubber Tires Into the United States."

News of the American Rubber Trade

The Rubber Industry Outlook

Sources of financial and statistical information agree that business in the United States is moving actively forward and experienced very little slowing up during the past summer. There is some decline in building contracts but continued gains in the volume of general business are predicted for the remainder of the year.

The outlook with respect to crude rubber stocks and consumption is reassuring to rubber manufacturers. They have confidence in the strong statistical position of rubber and the development of the technical value of reclaims. London stocks are steadily increasing and the 1926 consumption of crude rubber in the United States is forecast at 370,000 tons or 15,000 tons less than that used in 1926.

Whether or not the British Colonial Office will advance the pivotal price of plantation rubber on November 1 from 21*d.* to 24*d*, as said to be in contemplation, will be of special significance to the tire and automobile industries. Crude rubber influences the cost of automobile tire equipment sufficiently to be one of the factors in the keen competition in car sales. The policy of pushing the sales of popular low-priced cars is facilitated now more than ever by the low cost of the original tire equipment.

An approaching factor in the crude rubber outlook is seen in the research progress in the development of guayule as a potential domestic source of rubber in the United States, for which great commercial possibilities are forecast.

The production of motor vehicles in August exceeded 400,000, which is near capacity. The fall market is reported to be one of the best known in the passenger car industry, owing to the popularity of new small car models at prices that induce buying and maintain the demand for original tire equipment.

Tire factories in the Akron district are operating on three 8-hour shifts. Their August production of tires was estimated at 3,500,000 or about 130,000 daily. This is an increase of about 1,000,000 over the low monthly output of last spring. No marked reduction is at present indicated. In fact expansion of present manufacturing facilities is planned by certain of the smaller companies to supply the continued demand for tires.

Companies manufacturing mechanical rubber goods, rubber footwear, heels, insulated wire and cables are operating on full schedules. The same is true of the topping and proofing trades which have close alliance with the automobile industry.

Despite its slow beginning the output of the current year in the rubber industry will make an excellent showing.

The announcement by one of the leading Akron tire companies of the third reduction since last July in tire prices to automobile manufacturers is expected to be followed soon by a similar one to dealers. This action is attributable to the increasingly keen competition which prevails in the industry and may mean serious curtailment of manufacturers' profits for the year.

Financial

New York Stock Exchange Quotations

August 21, 1926

	High	Low	Last
Ajax Rubber, com.	8½	8½	8½
Fisk Rubber, com.	18	17⅝	18
Fisk Rubber, 1st pfd. (7)	80¾	80¾	80¾
Goodrich, B. F., Co., com. (4)	49⅛	49	49⅛
Intercontinental Rubber, com. (1)	15⅜	15⅛	15⅜
Kelly-Springfield Tire, com.	13	13	13
Keystone Tire & Rubber, com.	⅝	⅝	⅝
Norwalk Tire & Rubber, com.	5⅜	5⅛	5⅛
United States Rubber, com.	62⅝	61⅛	62¼

The Cambridge Rubber Co.

Officers and directors of the Cambridge Rubber Co., Cambridge, Massachusetts, are Warren MacPherson, president and treasurer; George H. Rockwell, manager; and E. W. Dunbar, clerk. A recent statement shows the company to be in good shape.

Assets		Liabilities	
Machinery	$184,859.32	Preferred stock	$134,600.00
Merchandise	436,585.13	Rubber drafts	53,358.22
Fixtures, tools	54,888.32	Accounts payable	143,864.12
Autos, etc.	15,035.25	Notes payable	375,000.00
Notes rec.	597.31	Reserves	84,026.75
Accts. rec.	377,550.11	Surplus	104,568.08
Cash	99,273.47	20,000 shares no par, common	238,350.00
Good will	1.00	Accrued payroll	29,305.39
Prepaid expense	6,961.26	Accrued taxes	6,100.00
		Accrued dividend	2,355.50
		Accrued expenses	4,223.10
Total	$1,175,751.17	Total	$1,175,751.17

Quabaug Rubber Co.

The Quabaug Rubber Co., North Brookfield, Massachusetts, heel and sole manufacturer, is running a good ticket. Officers are Herbert T. Mason, president-treasurer; Frank C. Smith, Jr., clerk; Henry S. Grew, and Frank A. Drury, directors. Financial statement follows:

Assets		Liabilities	
Real estate	$74,979.86	Capital stock	$250,000.00
Machinery	260,482.87	Accounts payable	80,087.46
Merchandise	179,482.73	Notes payable	60,000.00
Fixtures	5,453.07	Reserves	212,009.73
Autos, etc.	14,399.90	Surplus	64,870.48
Notes receivable	3,218.37	Accrued payroll	6,610.93
Accounts receivable	117,469.19	Taxes	13.29
Cash	7,245.34		
Deferred	10,860.62		
Total	$673,591.89	Total	$673,591.89

Beacon Falls Rubber Shoe Co.

The Beacon Falls Rubber Shoe Co., Beacon Falls, Connecticut, which is a Massachusetts corporation, has filed with the State the following certificate of its financial condition, dated May 31, 1926:

Assets	1926	1925	Liabilities	1926	1925
Real estate	$1,429,148	$1,438,566	Capital stock	$2,978,900	$2,988,900
Machinery	576,917	583,145	Accounts payable	2,402,132	2,813,421
Furn., fixt.	101,005	106,808	Mortgages	30,597	30,597
Auto trucks	9,455	12,825	Reserves	288,013	252,971
Merchandise	1,725,718	1,844,414			
Notes receivable	18,829	24,881			
Accounts rec.	1,062,702	1,178,766			
Cash	161,618	214,972			
Securities	79,492	83,578			
Deferred charges	54,834	58,253			
Profit and loss deficit	479,924	529,681			
Total	$5,699,642	$6,075,889	Total	$5,699,642	$6,075,889

Dividends Declared

Company	Stock	Rate	Payable	Stock of Record
Converse Rubber Shoe Co.	First pfd.	$1.75 q.	Sept. 1	Aug. 15
General Tire & Rubber Co.	Pfd.	1¾% q.	Oct. 1	Sept. 20
Goodyear Textile Mills	Pfd.	1¾%	.....	.....
Goodyear Tire & Rubber Co. of California	Pfd.	1¾% q.	Oct. 1	.....
Goodyear Tire & Rubber Co. of Canada	Pfd.	1¾% q.	Oct. 1	Sept. 15
Goodyear Tire & Rubber Co. of Canada	Ex.	3½%	Oct. 1	Sept. 15
Goodyear Tire & Rubber Co.	8% Cum. pr. pfd.	2% q.	Oct. 1	Sept. 15
Goodyear Tire & Rubber Co.	Pfd.	$1.75 q.	Oct. 1	Sept. 1
Hood Rubber Co.	Com.	$1.00 q.	Sept. 30	Sept. 20
India Tire & Rubber Co.	Com.	$0.625 q.	Oct. 1	Sept. 20
India Tire & Rubber Co.	Pfd.	1¾% q.	Oct. 1	Sept. 20
Miller Rubber Co.	Com.	$0.50 q.	Oct. 25	Oct. 5
Norwalk Tire & Rubber Co.	Pfd.	$1.75 q.	Oct. 1	Sept. 20
Overman Cushion Tire Co.	Pfd.	$1.75 q.	Oct. 1	.....
Overman Cushion Tire Co.	A com.	1½%	Oct. 1	Sept. 18
Overman Cushion Tire Co.	B com.	1½%	Oct. 1	Sept. 18
United Shoe Machinery Corp.	Com.	$1.00 ex.	.....	.....

Akron Rubber Stock Quotations

Quotations of September 20, supplied by Otis & Co., Cleveland, Ohio.

COMPANY	Last Sale	Bid	Asked
Aetna com.	17	...	17
Aetna pfd.	93	...	93
Falls com.	9½	6½	...
Falls pfd.	18¾	...	19
Faultless com.	45	42	45
Firestone com.	113	113	...
Firestone 1st pfd.	102	102	...
Firestone 2nd pfd.	97½	96½	97⅜
General com.	155	150	154
General pfd.	107½	...	...
Goodrich com.	53	...	...
Goodrich pfd.	98	...	...
Goodyear com. V. T. C.	34	...	35½
Goodyear pfd. V. T. C.	107¾	...	...
Goodyear pr. pfd. V. T. C.	107¾	...	...
India com.	29	29⅜	...
Miller com.	34½	...	...
Miller pfd.	101	100	101½
Mohawk com.	35	34	37
Mohawk pfd.	73	...	75
Seiberling com.	24	24	24½
Seiberling pfd.	98	97	100
Star com.	12	...	15
Star pfd.	35	...	...
Swinehart com.	8½	...	...

New Incorporations

AHLSTROM TIRE CO., INC., August 7, 1926 (Massachusetts), capital $5,000. Incorporators and officers: Henry F. Hovey, president; Victor E. Ahlstrom, 23 Austin street, treasurer; and George R. Hovey, clerk, all of Worcester, Massachusetts. Principal office, Worcester, Massachusetts. To deal in tires and other rubber goods. Also vulcanizing and repairing tires and rubber goods.

BURLINGTON RUBBER CO., INC., April 2, 1926 (Vermont), capital $10,000, divided into 100 shares of $100 each. Incorporators: William J. Crechetiere and Carroll A. Priest, both of 133 St. Paul street, Burlington, Vermont; and J. A. McNamara, 178 Main street, Burlington, Vermont. Principal office, Burlington, Vermont. To deal in rubber tires, tubes and accessories and to conduct a general repair and vulcanizing business on auto tires and tubes.

CENTRAL TIRE & ACCESSORY CO., INC., August 16, 1926 (Delaware), capital 250 shares without nominal or par value. Incorporators: A. L. Miller, Alfred Jervis, and G. M. Megear, all of Wilmington, Delaware. Principal office, with the Corporation Trust Company of America, duPont Building, Wilmington, Delaware. To manufacture, buy, sell, and deal in tires, tubes, accessories, etc.

ELECTRIC VULCANIZING RUBBER CO., August 24, 1926 (Delaware), capital 6,000 shares of common stock without nominal or par value. Incorporators: A. L. Miller, Alfred Jervis, and G. M. Megear, all of Wilmington, Delaware. Principal office, with the Corporation Trust Co. of America, duPont Building, Wilmington, Delaware. To deal in and with all kinds of rubber curing and vulcanizing devices.

ENGLEMAN TIRE CO., INC., August 27, 1926 (Delaware), capital $12,000. Incorporators: S. L. Mackey, L. C. Christy, and H. Kennedy, all of Wilmington, Delaware. Principal office, with the Corporation Service Company, Delaware Trust Building, Wilmington, Delaware. To deal in tires, etc.

GENERAL TIRE CO., June 14, 1926 (Nebraska), capital $10,000. Incorporators: Dan C. Longenecker, Thomas E. Dunbar and W. C. Robertson. Principal office, Lincoln, Nebraska. To conduct a general tire business in all its branches and to deal in rubber products, automotive and aircraft equipment.

HAWKINS TIRE CO., INC., September 8, 1926 (New York), capital $20,000. Incorporators: Frederick Brock Davy, Marion M. Davy and Mary E. Davy, all of 52 West Falls street, Niagara Falls, New York. Principal office, Buffalo, New York. To deal in tires.

THE MAUMEE VALLEY RUBBER CO., July 26, 1926 (Ohio), capital $75,000. Incorporaters, officers and directors: S. F. Nowak, president and director; C. J. Niethammer, vice-president and director; Arthur Pieper, secretary-treasurer and director; Hermen Yenneman, director; and John Greenwood, director. Principal office, 302 Florence street, Toledo, Ohio. To manufacture and distribute high class rubber goods such as repair materials for the vulcanizing trade, and line of molded mechanicals.

NATHAN RUBBER & TIRE CO., INC., September 10, 1926 (New York), capital $10,000. Incorporators: Charles S. Bornheim, 549 Isham street, New York City; Ivan Nathan and D. A. Nathan, both of 323 Beta Place, Brooklyn, New York. Principal office, Manhattan, New York. To deal in auto tires.

PALMER & COMPANY, INC., September 7, 1926 (New York), capital $50,000. Incorporators: Thomas F. Palmer and Clara Palmer, both of 196 Highgate avenue, Buffalo, New York; and Alexander F. Chapin, 48 Woodward avenue, Buffalo, New York. Principal office, Buffalo, New York. To manufacture auto tires.

SECURITY RUBBER & BELTING CO. OF NEW ENGLAND, August 31, 1926 (Massachusetts), capital $15,000 preferred stock and 600 shares of common stock without par value. Incorporators and officers (who also constitute directors): Daniel B. Morris, president and treasurer, 91 Bay State Road, Boston, Massachusetts; Adelaide L. English, 20 Blue Hills Parkway, Milton, Massachusetts; Neil H. Lyke, 22 Rockland avenue, Malden, Massachusetts; Charles H. Kent, Cheshire, Connecticut; Harold B. Sherman, 261 Mill street, Newtonville, Massachusetts; George W. Bennett, 2837 South LaSalle street, Chicago, Illinois. Principal office, 131 State street, Boston, Massachusetts. To deal in rubber belting, water, steam and air hose and kindred appliances.

STONE TIRE SERVICE, INC., August 31, 1926 (New Jersey), capital $50,000. Incorporators: Gilbert S. Stone, John W. Stone, Jr., and Benjamin F. Stone, all of 745 Market street, Camden, New Jersey. Principal office, 745 Market street, Camden, New Jersey. To deal in automobile tires, tubes, casings, and other rubber products.

SULLIVAN TIRE & RIM CO., July 16, 1926 (Washington), capital $50,000. Incorporators: P. J. Sullivan, L. A. Sullivan and F. W. Fox, all of Tacoma, Washington. Principal office, Tacoma, Washington. To conduct and carry on a general wholesale and retail automobile tire and accessory business in all of its branches.

WESTCHESTER TIRE & VULCANIZING CO., INC., September 2, 1926 (New York), capital $5,000. Incorporators: Benjamin Schwartzenberg and Ida Schwartzenberg, both of 738 East 169th street, Bronx, New York; and Abraham H. Rossman, 500 West 111th street, Bronx, New York. Principal office, Bronx, New York. To deal in auto accessories.

WESTERN AUTO SUPPLY CO OF KENTUCKY, July 17, 1926 (Kentucky), capital $5,000. Incorporators: William Friedlander, B. Hueisman and E. J. Levey. Principal office, Louisville, Kentucky. To buy and sell both wholesale and retail automobile accessories of all kinds.

The Rubber Trade in the East and South

The Binney & Smith Co., 41 East 42nd street, New York, N. Y., is now the sole selling representative of the Columbian Carbon Co., which manages and operates the carbon plant of the recently-formed Interstate Natural Gas Co. The latter organization was established in order to pipe gas from the Monroe field of Louisiana to Baton Rouge and intermediate points.

Vansul, Inc., has opened offices at 90 West street, New York, N. Y., for the purpose of handling compounding materials and chemicals for the rubber trade. Theodore G. Sullivan, president of the new company, has for many years been associated with the rubber industry, particularly in the activities of the Clapp Products Co., Boston, Massachusetts, a subsidiary of the E. H. Clapp Rubber Co. Another executive of Vansul, Inc., is Frances Sullivan, who becomes vice president and secretary.

Wishnick-Tumpeer, Inc., 251 Front street, New York, N. Y., specializing in chemicals and pigments for the rubber industry, has opened a fully-equipped rubber laboratory under the supervision of John M. Dawson, formerly connected with the Dunlop Rubber Co. The company now has better facilities for giving technical service to the trade.

Theodore Wood and M. C. Vanderpyl announce the establishment of a crude rubber brokerage business, under the trade name of the Wood Vanderpyl Co., with offices at 15 Park Row, New York, N. Y.

M. J. Overeijnder, a partner of Weise & Co., Rotterdam and Amsterdam, one of the largest crude rubber dealers in Europe, recently visited the rubber trade in New York and Akron. Mr. Overeijnder is one of the best known rubber men in Europe and is on the Committee of the Netherlands Rubber Trade Association, and treasurer of the Netherlands Rubber Dealers Association. Walter H. Bass & Co., 136 Liberty street, New York, N. Y. represents Weise & Co., in this country.

The business of Taylor, Armitage & Eagles, Inc., 120 Broadway, New York, N. Y., has been discontinued, while on September 1 R. P. M. Eagles became associated with Minot, Hooper & Co., 11 Thomas street, New York, N. Y., the last-mentioned organization to carry in the future the products of the Essex Cotton Mills. Myron C. Taylor and J. Dickinson Armitage have retired from further connection with the business.

R. P. M. Eagles, who for years has been one of the leaders in the tire fabric industry, began his business career with Catlin & Co., cotton goods commission merchants, where he served in various capacities, being finally appointed department manager. Later he was associated with the International Cotton Mills of New York as manager of the selling department until the establishment in 1914 of Taylor, Armitage & Eagles when he was appointed secretary and general manager. Devoted to outdoor sports, Mr. Eagles is a member of the Essex Country Club, the Roseville Athletic Association, and the Shongum Club, all in New Jersey.

A subsidiary of the Endicott Johnson Corporation, Johnson City, New York, formerly known as The Paracord Co., Inc., is at present building a reclaimed rubber plant to supply reclaim for the company's own use. The new one-story construction will measure 90 by 340 feet. About a year and a half ago the organization extended its rubber factory by building a five-story addition.

The Goodyear Rubber Co., Middletown, Connecticut, resumed operations September 7 after being shut down during August. The boot department will not be reopened until later in the season but the mill room, cutting department, heavy, light shoe, and gaiter departments as well as the packing room are operating on full time tickets.

The Sponge Rubber Products Co. has recently moved into its new factory at Derby, Connecticut, where new and additional equipment has been installed in order to care for the company's sponge ball trade. Other products will include bath sponges, sheet sponge rubber, dried sponge, also molded sponge rubber specialties. Executives of the organization include: F. M. Daley, president; Lowell Smith, vice president and factory manager, and William R. Todd, secretary and treasurer.

H. C. Benner, for many years connected with the Firestone organization, is now factory manager for the Lee Rubber & Tire Corporation, Conshohocken, Pennsylvania.

J. J. Mathews has become associated with the General Tire & Rubber Co., Akron, Ohio, as factory representative in accessory and repair material sales, his territory to include the eastern and southeastern sections of the country. Mr. Mathews was for seventeen years connected with Charles F. Smith, Inc., Philadelphia, Pennsylvania, in the work of selling accessories, repair material, and tires.

The Johnson Tire & Auto Co., with main offices in Montgomery, Alabama, opened a new branch on August 1 at 400 South 41st street, Birmingham, Alabama. The organization handles Hood tires exclusively.

Redsken Products Co., Inc., 219-221 Preston avenue, Houston, Texas, specializes in the manufacture of a line of red tube patches, although the organization is marketing more than sixty products for the repair of automobiles. Three divisions of the company are being maintained in Houston, another has been recently opened at Fort Worth, while plans are under consideration for still other branches. M. E. Glenn is president.

The India Tire & Rubber Co., Akron, Ohio, announces that B. B. Wright has been placed in charge of its Dallas, Texas, branch.

The Carolina Rubber Co., Salisbury, North Carolina, reports increasing sales of Carolina Comfort balloon tires, Clover Leaf high pressure tires and inner tubes, the present factory output being approximately 900 tubes daily. Executives of the Carolina organization include: Justus Collins, president; C. S. Munro, vice-president and general manager; G. E. Rusher, secretary; and J. E. Prettyman, treasurer.

The Clearwater Cotton Mills, Cedartown, Georgia, a subsidiary of the Goodyear Tire & Rubber Co., Akron, Ohio, is enlarging its main mill, which will have a capacity equivalent to 60,000 spindles, as day and night schedules are to be maintained. About 900 operatives are to be employed and one hundred new houses are under construction. The enlarged plant will, by December 1, be ready for machinery, and it will constitute the fifth of the cord fabric mills maintained by the Goodyear company. With the completion of the Cedartown additions the Goodyear organization will be operating 150,000 spindles and turning out more than 40,000,000 pounds of fabric a year, representing more than half of its requirements.

Activities of Hewitt Rubber Co.

The Hewitt Rubber Co., 240 Kensington avenue, Buffalo, New York, manufacturer of tires and tubes, and mechanical rubber goods, reports increased shipments of its products to foreign countries, as well as a gain in its domestic business. Officials also mention the following changes in sales personnel: G. J. Bonness has been appointed manager of the company's branch at Denver, Colorado, while Fred E. Warneke has been made manager of tire sales in the Chicago district. W. J. Bryson, with headquarters at Pittsburgh, is now covering Western Pennsylvania, and Edward Taylor is working out of Buffalo in connection with the tire sales division.

The Rubber Trade in Rhode Island

The final quarter of the year opens with the most promising conditions for a renewal of business activity among the rubber manufacturing interests in Rhode Island that have existed since the pre-war period. Everybody—employers and employes—have been optimistic in the past but there seems to be a more substantial optimism now prevailing, and from practically every plant come reports of at least slight improvement in present conditions and in the outlook. This is especially the case with those concerns that are producing novelties and druggists' and medical supplies.

The several departments of the United States Rubber Co's. plants at Valley and Hemlock streets, Providence, are working on a full time schedule of five and a half days a week and, as there is a slight improvement in all lines of production, the indications are favorable for a busy fall and well into the winter months. To facilitate the handling of increasing shipments, both incoming and outgoing, a large open steel shed has recently been erected in connection with the shipping department.

The shoe division (keds) of the National India Rubber Co.'s plant at Bristol resumed operations September 7, after a week's shut down for the purpose of taking an inventory. The wire division at the factory was not closed but operations were continued on the regular schedule. Beginning September 20, the shoe division of the National began operating on a five-day schedule. Work in this division has been slack during the past year and the operatives are looking forward in anticipation of full time schedules in the near future. The wire division, employing 500 or more, has been busy for several months, having a number of large contracts on hand which will furnish the operatives with steady employment for the next three or four months, at least.

The planning department of the National India Rubber Co. held a field day and outing at Camp Takarest on the shores of Mount Hope Bay, on Saturday afternoon, September 11, when games were played and a clambake served.

The new sales building for the Goodrich Rubber Co., that has been erected at the corner of Bucklin street and Bellevue avenue, Providence, is practically completed and ready for occupancy. It is a one-story structure of brick and steel, with particularly heavy foundations and so constructed that additional stories may be built as desired. It is 99 feet frontage and 180 feet deep, with an extensive sales and show room and offices in front, while the rear room is arranged for the storage of an almost unlimited number of tires so systematically placed as to be accessible without any loss of time.

Richard LeB. Bowen was discharged on September 10 as receiver for the O'Bannon Corp., under a decree entered by Presiding Justice Willard B. Tanner in Superior Court. Mr. Bowen was appointed as permanent receiver on August 11, 1921. The property of the corporation at West Barrington, in this State, and the property in Massachusetts was sold March 3, 1922, under a decree of sale authorizing Arthur A. Thomas as special master to sell the property. The purchasers were Charles H. Moore of Cambridge, Massachusetts, and Bartlett Harwood, of Boston.

The Bourn Rubber Manufacturing Co., Providence, Rhode Island, is reported to be doing very well since its reorganization. Just at present the plant is busy on production of gaiters. E. W. Dempsey, formerly assistant superintendent of the Cambridge Rubber Co., is superintendent and A. L. Lingley, formerly with the Converse Rubber Shoe Company, is assistant superintendent. John Ward is master mechanic.

The annual picnic and field day for the employes of the Columbia Narrow Fabric Co., and of the Peace Dale Braiding Co., of Shannock, was jointly held on August 28 at Sandy Pond, some few

miles from the plants. A long program of sports and games for both men and women furnished entertainment and enjoyment for the party and a picnic dinner followed by dancing concluded the day's diversions.

The Rubber Trade in New Jersey

All branches of the rubber industry in New Jersey, with the exception of hard rubber, are very busy and the slump in the latter product is causing some concern among the manufacturers. The tire and tube production continues active and orders for balloon tires are on the increase, while mechanical rubber goods are in good demand. There has been a notable increase in the orders for rubber cloth for automobiles and also rubber golf bags.

The Pocono Rubber Cloth Company, Trenton, New Jersey, continues to prosper, and August was the largest month in its history for rubber automobile cloth. The company's trade in rubber golf bags has made necessary an addition which will contain 10,000 square feet of space.

The Luzerne Rubber Co., Trenton, New Jersey, announces a decline in the production of hard rubber goods, although none of the employes have been laid off.

Frank W. Servis, secretary of the Combination Rubber Co., Trenton, New Jersey, has returned from a business trip through the West, having visited agencies where Viking tires and tubes are handled. He reports that the business outlook is very good.

The Fisk Flap Rubber Tube Co., incorporated in Trenton, New Jersey, a few years ago, has purchased the plant of the Spartan Rubber Company, Yardville, near Trenton, and has begun the manufacture of tubes invented by C. Francis Fisk, president of the concern. The company maintained an office in Camden for some time and had its tubes manufactured at different Trenton plants. The Spartan plant has been remodeled, new machinery added, and will shortly begin to turn out 500 red Fisk tubes daily.

The Ajax Rubber Co., Trenton, New Jersey, is building a one-story brick addition to its plant. The company is reported to be quite busy at the present time.

The Pierce-Roberts Rubber Co., Trenton, New Jersey, is now operating to capacity its entire plant, which was rebuilt following the destruction by fire six months ago.

According to the manufacturers' census figures given out by the Department of Commerce, the number of wage earners in the New Jersey tire industry was given as 4,008; wages paid, $5,926,296, and total value of product, $41,558,331. Eleven tire and tube factories are located in New Jersey.

Whitehead Brothers Rubber Co., Trenton, New Jersey, is erecting a one story brick addition, 50 by 60 feet, to be used in the manufacture of cotton hose. The company is very busy in all its departments and reports increased orders for all kinds of hose.

Machinery and equipment of the Globe Rubber Tire Manufacturing Co., Trenton, New Jersey, were sold at public auction recently and netted about $10,000.

Ernest V. McMahon has returned to his home at Edgehill Gardens, Pennsylvania, after a business trip to Detroit, Michigan. Mr. McMahon is connected with the Ajax Rubber Co.

William J. B. Stokes, prominent rubber manufacturer of Trenton, New Jersey, recently celebrated his sixty-ninth birthday with a family dinner at the Stokes home at Trenton.

John M. Dickinson, of Trenton, has been appointed special master to ascertain the amount of profits derived by the Murray Rubber Co., Trenton, New Jersey, from the use of tire making machines on which De Laski & Thropp Woven Tire Co., Trenton, New Jersey, holds patents. The appointment was made by Federal Judge Joseph L. Bodine in issuing an interlocutory decree restraining the Murray company from further use of the machines and orders an accounting of profits derived.

Officials of the De Laski & Thropp Woven Tire Co. announce that they will start proceedings against tire companies in this country, England, France, Australia and Canada who have been using the De Laski & Thropp tire making machine without license agreement.

Judge Runyon in the United States District Court, Trenton, New Jersey, has approved the claims of Mrs. Louise Morrison Murray and Mrs. Anne Apgar Murray totaling $24,000 against the defunct Empire Tire & Rubber Co. The sum will be deducted from the assets of the bankrupt concern. The decision of the court sustains a recommendation made by Special Master Edward M. Hunt who had been appointed to investigate the claims of the two women.

The Essex Rubber Co., Inc., Trenton, New Jersey, has completed two new buildings, which, of somewhat greater extent, will replace those destroyed by fire in January of the present year. Both structures, costing approximately $110,000, are of brick and steel construction, one measuring 70 by 250 feet and the other 60 by 240 feet. The company manufactures rubber soles and heels and various mechanical specialties. Executives include: C. H. Oakley, president and general manager; A. E. Moon, secretary; and Owen Moon, Jr., treasurer.

Press reports state that the plant and machinery of the Braender Rubber & Tire Co., Wallington, near Passaic, New Jersey, have been acquired at a public auction for $100,000. The new owners, L. M. Drew and associates, are said to be making plans for operating the plant.

The Dural Rubber Corporation, Flemington, New Jersey, has installed additional equipment and is now operating at capacity in its production of Dural red inner tubes. The company also manufactures radio, aircraft, and milking machine rubber equipment, washers, grommets, and molded rubber goods. R. W. Case is secretary and general sales manager.

The Rubber Trade in Massachusetts

The fall season finds the local rubber trade operating on an unusually sound basis; all mills are operating full time, some at capacity; inventories of raw and finished goods are low, and there is a sizeable quantity of both moving along the regular channels at an even rate.

Translated into individual cases, in the footwear field, the Hood rubber company is operating full time on a schedule of 70,000 pairs per day; the decrease from last spring is on account of the change from tennis to gaiters. One pair of gaiters equals nearly three pairs of tennis in money value. Cambridge is running a gaiter ticket of nearly 10,000 pairs; Converse went on full time schedule September 11 which includes Saturdays and is increasing the gaiter and gum shoe ticket to a point where a night shift of makers is necessary. The company has also been obliged to rent outside storage room on account of production demands for space. The Boston Rubber Shoe Co. has concentrated operations at the Malden plant, the Fells factory No. 2 at Melrose having been closed. A large gaiter ticket is being made. Firestone has resumed work at Hudson on the new $500,000 addition to the plant which was temporarily suspended during the labor trouble of last summer. On the whole the footwear outlook is the brightest for several years, and if Harold Janvrine Brown's predictions of a severe winter come true, the schedule now in operation will be prolonged after the first of the year.

Another branch of the trade which has received a new lease of life this month is the automobile topping and proofing group. Reading Rubber Co., Reading, and Archer Strauss Rubber Co., Framingham, in particular, are operating full time on rush orders from the automobile trade.

Tire shipments to dealers have been unusually heavy although this has not been reflected in the manufacturing schedules to the fullest extent owing to reduction of inventories; Hood is said to

be making 1,600 tires; Converse is operating on a schedule of 210 per day; and Fisk schedule is reported at 25,000 tires daily. With sales of over $7,000,000 in August this company has shown sales for the first ten months of its fiscal year of $57,000,000. In the two remaining months, it is not expected to quite reach the $75,000,000 total of 1925 although the mark should be between $65,000,000 and $70,000,000. President H. T. Dunn is very optimistic over the 1927 prospects and says next year's business will exceed this by over 15 per cent.

The distribution field in the tire industry at Boston has been keenly interested in the announcement that E. H. Kidder, formerly United States Rubber Co.'s tire manager at Boston for many years until he took the general sales managership at Dunlop, has returned to his native town to be New England sales manager for the Ajax Rubber Co. In joining Ajax Mr. Kidder also renews an old-time business association with its president, Joseph C. Weston.

The following Massachusetts rubber reclaimers are finding ample outlets for their increased capacity: E. H. Clapp Rubber Co., Hanover; Acushnet Process Co., New Bedford; Appleton Rubber Co., Franklin; Stedman Products Co., Braintree; and the reclaiming plants of the Hood Rubber Co., Watertown, and the Boston Woven Hose at Plymouth.

George McCrea, formerly superintendent of the Appleton Rubber Co., Franklin, is now New England sales representative for the Stedman Products Co., Braintree, Massachusetts, makers of reclaimed rubber.

Robert Cowen, formerly superintendent of the mixing department at the Fisk Rubber Co., Chicopee Falls, Massachusetts, is now superintendent of the Appleton Rubber Co.

F. W. Bommer, for many years technical manager of the Converse Rubber Shoe Co., and later general manager of the Lambertville Rubber Co., is now president of the Arlington Rubber Co., Everett, Massachusetts. The company specializes in the manufacture of golf balls and is very busy turning out a big production ticket.

G. W. Philbrook, formerly manufacturer's heel representative of the Hood Rubber Co., later of the Pine Tree State Rubber Co., has joined the staff of the Converse Rubber Shoe Co., Malden, Massachusetts, as special sales representative.

The heel and sole plants in New England report exceptional business. The Webster Heel Co., Sabattus, Maine, has orders on the books for several months ahead. Theodore Cowen is general manager.

The Panther Rubber Manufacturing Co., Stoughton, Massachusetts, producing rubber heels and soles, mats and matting, mechanical molded rubber goods, reports assets of $1,089,597.77 for the year ended December 31, 1925, and after deducting reserves for depreciation, taxes, etc. A corresponding total for the Panco Rubber Co., Chelsea, Massachusetts, which has practically the same officers, includes for the period mentioned $1,094,019.03. Other organizations controlled by the same stockholders are: the Puritan Rubber Manufacturing Co., Trenton, New Jersey; the American Tile & Rubber Co., a Massachusetts corporation; and the Panther Rubber Co., Ltd., Sherbrooke, Quebec, Canada.

The 121st annual meeting of the National Association of Cotton Manufacturers will be held October 13-14, 1926, at the Copley-Plaza Hotel, Boston, Massachusetts. An interesting program has been prepared.

Firestone Footwear Co. has placed on the market a boot with a sliding fastener, and reports increased production at the plant in Hudson, Massachusetts. A new merchandising policy has been inaugurated, since the name of the subsidiary was changed from Firestone-Apsley to Firestone Footwear Co. The old Apsley company sold its product largely to jobbers, but Firestone is building up a selling organization to sell direct to the retailer. The name "Firestone" is a big asset owing to the widely advertised parent tire company.

The Haartz-Mason Rubber Manufacturing Co.

The Haartz-Mason Rubber Manufacturing Co., 270 Pleasant street, Watertown, Massachusetts, was incorporated in August of the present year for the purpose of manufacturing a general line of rubberized fabrics. The president of the organization, John C. Haartz, was founder and former head of the J. C. Haartz Co. of New Haven and is now president of the Haartz Auto Fabric Co., Cambridge, Massachusetts. J. H. Mason, treasurer and general manager, has for the last fifteen years been associated with the rubberizing business, during the past five years as general manager of the Vulcan Proofing Co., Brooklyn, New York, his previous connections also including work with the Duratex Co., Newark, New Jersey, and the Plymouth Rubber Co., of Canton, Massachusetts.

The Haartz-Mason company is at present building a factory in Watertown which, when completed, will represent a floor space of approximately 22,000 square feet. The plant is to be well equipped for the production of rubberized fabrics, the output to be principally automobile top materials, raincoat fabrics, hospital sheetings, and general proofing for the trade. Factory operations will begin early in November.

The Rubber Trade in Ohio

Following a lull in activity after Labor Day, sales and production of automobile tires, tubes and other rubber products started on an upward trend again, bringing the September volume of business to fairly high levels. Production of Ohio factories for the month was not as large as the record breaking month of August, when it is estimated that close to 3,400,000 tires were produced, but September business was ahead of last year and not far behind any previous month of 1926. It is believed that tire and rubber footwear sales in the fall will be much better than expected.

Early in September orders from automobile manufacturers declined considerably, and dealers apparently were well stocked with tires. At the same time the crude rubber market was weak, and buyers were cautious in fear of a possible price reduction. This caused a temporary slowing up in production at several of the Akron rubber factories, especially those handling a large amount of original tire equipment business. The usual seasonal recession in the automobile industry has not been as pronounced as was expected and although automobile manufacturers have not ordered as many tires as in midsummer, this business is holding up surprisingly well for the tire companies. However, the medium sized and smaller concerns selling their products exclusively through dealers still are running at full capacity in most cases. Among these are General, Seiberling, Mohawk, India, and Star. In August these companies were behind on orders for tires, but production is beginning to catch up with shipments, and there probably will be no curtailment for some time.

In general production is not being pushed to the peak, as it was last month, several thousand tires a day less being turned out, and officials of the big companies say efforts are being made to stabilize the output so that about the same force of men will be kept on the job during the fall and winter. The seasonal recession has been checked, however, by the improved outlook for the industry, and manufacturers have revised upward their estimates of future production. A rapid speeding up in operations in rubber footwear and mechanical goods departments and a better outlook for tire business were noted as the month drew to a close.

Tire manufacturers are expected to meet in the near future to definitely adopt their 1927 spring dating policy. Dealers are eagerly awaiting such announcement, which may determine the trend of prices over the next few months and help stabilize conditions for the entire industry. Manufacturers are not expected to solicit orders for shipment before January, 1927. Spring dating was deferred until February 10 last winter as a means of conserving crude rubber. Decision as to the dates of dealers' pay-

ments probably will be governed by zones, as has been done in the past, allowances being made for slower stock turnovers.

Despite difficulties due to crude rubber fluctuations, the volume of business handled by the rubber industry in 1926 probably will exceed any previous year on record. Sales are expected to reach $1,500,000,000 against $1,250,000,000 in 1925, and tire dealers will probably sell 40 to 50 per cent more tires in the last half of 1926 than they did in the first six months.

Between 65 and 70 salesmen and branch managers of the Mohawk Rubber Co. assembled in Akron, September 27, 28, and 29 for their annual sales conference. President S. S. Miller presided over meetings at the plant, at which future sales policies were discussed. Despite difficulties earlier in the year, due to the crude rubber situation, Mohawk sales so far this year have been the largest in the history of the company. The plant was behind on orders in August, and production is just catching up with shipments.

C. C. Prather is now general sales manager of the India Tire & Rubber Co., Akron, Ohio, relieving P. C. Searles, who will continue his duties as secretary and treasurer. Increased business demanding factory expansion is being met by the erection of an addition, 36 by 80 feet, which will be used for storing pigments and other materials, releasing space in the present factory for production purposes.

C. C. Prather

Since the beginning of May operations at the plant of the General Tire & Rubber Co., Akron, Ohio, have been maintained at peak capacity, while the demand for General products has never been greater than at present. The organization is announcing its regular preferred dividend, while the common stock dividend is to be declared a month later. The company, since its establishment in 1915, has never failed to announce the regular quarterly dividends on both classes of stock.

Akron manufacturers have been reported to be rather heavy buyers of crude rubber in the past few weeks. Much of this is for use in the winter and in the early spring of 1927.

Goodyear Industrial University, where thousands of company employes have been training in high school and college courses, opens for its 1926-27 term October 4. Enrollment will be the largest in the school's history, nearly 1,000 having registered. Classes are taught day and evening, and several new subjects have been added to the curriculum. President Litchfield says "it is Goodyear's desire to place employes in the highest type of work for which they are qualified." The university courses are recommended to all company employes as an excellent aid to self-development.

Owing to illness, Warren H. Jones has resigned as assistant superintendent of The Pharis Tire & Rubber Co., Newark, Ohio. Mr. Jones will take a short rest at his home on Long Island before again resuming work.

The Tuscan Tire & Rubber Co., Carrollton, Ohio, reports that its tire business has been better during 1926 than during the past five years, while during the same period the inner tube and druggists' sundries departments have also been satisfactorily busy.

The Goodyear Tire & Rubber Co., Akron, Ohio, which made a new high production record in August of 1,060,000 casings and 1,950,000 tubes, has curtailed operations to some extent, but not as much as was predicted.

The Ohio Rubber & Textile Co., Willoughby, Ohio, specializing in textile products and mechanical rubber goods, is erecting a new power plant which will cost approximately $58,000. Plans call for the completion of this building by November 1. Henry Hallock is president.

E. D. Kitchen, who has for more than twelve years been connected with the Mohawk Rubber Co., Akron, Ohio, has been appointed manager of the organization's stock distribution department, with headquarters at the Akron general offices.

The Falls Rubber Co., Akron, Ohio, specializing in Falls tires, Evergreen tubes, and Neverpinch rubber flaps, reports the following new distributers of its products: the Keefer Auto Service Co., 25 East Park avenue, Dubois, Pennsylvania; J. O. Heverly, Bellefonte, Pennsylvania, and Chase & Teddy, Oakland, California, the latter maintaining also a branch establishment in San Francisco, and distributing Falls products throughout Northern California.

In order to increase its plant capacity the Willard Storage Battery Co., 246-286 East 131st street, Cleveland, Ohio, is now completing a three-story building to be used for storage purposes. In addition, the organization is erecting a four-story reinforced concrete building, measuring 135 by 212 feet, and containing 114,000 square feet of floor area. The company is now manufacturing from 9,000 to 10,000 batteries daily. H. W. Lormor is equipment manager.

The business of The Erie Rubber Corporation, Sandusky, Ohio, has, since January, 1923, advanced more than 700 per cent. During the period mentioned there have been steady additions of new machinery and equipment, while plans are now under way for still further installations in order to bring the daily production of tires up to approximately 1,200 and tubes 1,500. There have been no changes in the Erie executive personnel since the establishment of the organization. J. M. Dine is sales manager.

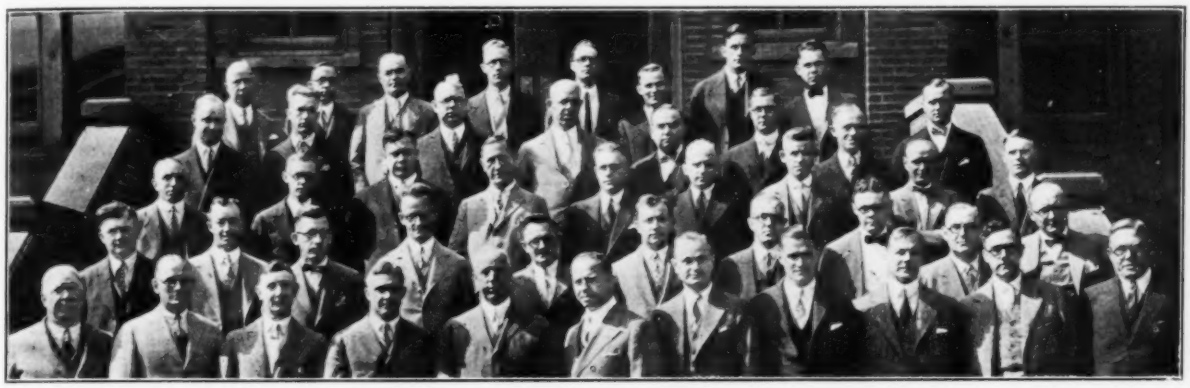
P. H. Ober, for several years vice president of The Mansfield Tire & Rubber Co., Mansfield, Ohio, has been elected president of the Central Ohio Manufacturers' Association, succeeding Z. E. Taylor. This office will not interfere with Mr. Ober's duties as vice president and assistant general manager of the Mansfield organization.

The Republic Rubber Co., Youngstown, Ohio, announces the appointment of C. B. Mitchella as chief engineer. For the past twenty-one years Mr. Mitchella has been associated with the Goodrich organization, where previous to his present appointment he was serving as superintendent of construction and design.

An addition to the factory of The Lancaster Tire & Rubber Co., Columbus, Ohio, has been recently completed, while a considerable quantity of new machinery and equipment has been installed throughout the plant to provide increased production. The following personnel changes have taken place: O. H. Williams has, because of ill health, resigned as president, and has been succeeded by E. E. Lerch, who also assumes the position of general manager; F. A. Miller is chairman of the board of directors; C. S. Hutchinson becomes vice president; C. C. McCandlish, formerly assistant treasurer, has been appointed treasurer; J. Lawrence Porter continues as secretary and has also been elected assistant treasurer; W. W. Hunt, R. B. Searight and G. T. Currier continue respectively as assistant secretary, factory manager and sales manager.

The Henne-Miller Tire Co., handling Columbia tires exclusively, is now in its new quarters at 84-86 North Fourth street, Columbus, Ohio. In its present location the company has four times as much space as previously.

A record fall and winter season for the rubber footwear industry is predicted by officials of The B. F. Goodrich Rubber Co., Akron, Ohio, and the Firestone Tire & Rubber Co.'s footwear subsidiary in Massachusetts. The new Akron warehouse for storage of footwear, eliminating rented warehouses in various sections of the country, is now in use. Another excellent season is anticipated for the Goodrich "Zipper" boots, which have been so popular.



Goodyear Heads Meet at Akron for Inter-Plant Conference

Left to right, front row: Wm. State, consulting engineer; Wm. Stephens, general superintendent, Akron; E. H. Ko'en, general superintendent, Canada; Cliff Slusser, vice president and factory manager; P. W. Litchfield, president; F. K. Espenhain, first vice president; C. F. Stone, vice president; H. E. Blythe, vice president, California; John Mapel, president, California; L. S. Hall, superintendent, New Bedford, Mass., cotton mills; P. H. Hart, treasurer, Akron.

Second row: L. P. Barrett, division superintendent, Canada; E. Christy, superintendent, coal mines; R. T. Brown, technical service, Canada; B. Darrow, Akron; J. P. Heaney, superintendent, cotton mills, California; E. C. Gagnon, chief chemist, New Toronto; G. I. Parmenter, superintendent, Cedartown, Ga., cotton mills; J. E. Lassiter; C. W. Young, superintendent, Killingly mills; H. D. Hoskin, Akron.

Third row: A. M. Hardy, superintendent, Bowmanville; H. E. Morse, Akron; H. O. Allman, division superintendent, Canada; Hank Gillen, Akron; F. A. Steele, division superintendent, California; C. J. Reese, technical service, California; C. C. Grant, Akron; L. C. Rockhill, general sales manager, Akron; R. J. Brady, purchasing, California.

Fourth row: H. K. Barton, assistant sales manager mechanical goods, Canada; C. E. Shumaker, Canada Personnel; Elmer Clarke, Akron; W. I. Satow, Akron; Tom Linnane, Akron; Arthur Frise, foreman, Bowmanville; Hal Campbell, Akron; E. J. Thomas, Akron.

Last row: C. E. Falor, Akron; V. N. Braden, Akron; J. P. Goudreault, superintendent, St. Hyacinthe, Quebec, Mills; W. H. Fleming, Akron; V. A. Schiller; J. G. Polm; W. H. Whitman; L. M. Bradley, the last four being in the inter-plant relation department, Akron.

Goodyear Inter-Plant Conference

The largest inter-plant conference in the history of The Goodyear Tire & Rubber Co., attended by 30 executives from the tire factories, cotton mills, coal mines and rubber plantations of that company, was held in Akron, Ohio, last month.

Officials from the outlying plants who attended the annual conference included men from the Goodyear factories at New Toronto and Bowmanville, Canada, from the tire factory near Los Angeles, California, the coal mines at Adena, Ohio, the Goodyear rubber plantation in the Far East, and from Goodyear's five textile mills located in Connecticut, Canada, California, Georgia, and Massachusetts.

The conference, the sixth held by Goodyear, was in progress for three days, and during that time operating plans for the coming year were discussed. President P. W. Litchfield and Vice-President and Factory Manager Clifford Slusser presided over the meetings.

Another Tire Price Reduction

On September 23 a reduction in the prices of tires to automobile manufacturers was announced by the Firestone Tire & Rubber Co., Akron, Ohio, this reduction ranging from 7½ to 10 per cent. This action, which is expected to be followed by similar cuts by other tire manufacturers, represents the third reduction on original equipment since July. Increasing competition in the industry is said to be the cause. Announcements of cuts to dealers are also expected.

Midwestern Notes

Among the organizations participating in the eighth annual convention and national steel and machine tool exposition of the American Society for Steel Treating, held in Chicago, Illinois, from September 20 to 24 were the following: the American Cyanamid Co., Inc., 511 Fifth avenue, New York, N. Y.; the Bristol Co., Waterbury, Connecticut; the Cooper-Hewitt Electric Co., Hoboken, New Jersey; the General Electric Co., Schenectady, New York; the Roessler & Hasslacher Chemical Co., 709 Sixth avenue, New York, N. Y.; the Shore Instrument & Manufacturing Co., Jamaica, New York; and the Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pennsylvania.

J. A. Glaspy has been appointed manager of the Chicago branch maintained by the Mohawk Rubber Co., Akron, Ohio. Mr. Glaspy has for a number of years been associated with the rubber industry, and has been successively manager of the Milwaukee and Chicago branches of the Kelly-Springfield organization.

Detroit Rubber Products, Inc., manufacturer of various rubber specialties, announces the removal of its offices to 2841 East Grand Boulevard, Detroit, Michigan.

Approximately 400 tires are produced daily by the Steinbrenner Rubber Co., Noblesville, Indiana, the daily output to be increased during the next few weeks to 500 tires. H. M. Bradford, formerly factory manager, is still in charge of production, and E. W. Pickett is superintendent. Under the management of John Owen, receiver, it is believed that the plant can in two years pay off all indebtedness.

Jennings Service, 754 Minnesota avenue, Kansas City, Kansas, is completing its new $150,000 establishment, which is thoroughly equipped for the convenience of its patrons as well as the handling of Goodyear tires.

A branch sales and service office has been established in the United States National Bank Building, Denver, Colorado, by The Bristol Co., Waterbury, Connecticut, manufacturer of recording pressure gages, thermometers, pyrometers, etc. At the new location H. T. Weeks will be representative in charge.

The Western Rubber Co., Goshen, Indiana, is constructing a new building 60 by 270 feet with 100,000 square feet of floor space, and better facilities for carrying on its manufacture of mechanical rubber goods. Incorporated in 1901, the company reports business for the first six months of the present year as showing an advance of 24 per cent over the same period of 1925, while the outlook for the remainder of the year is also most satisfactory. Since 1904 George B. Slate has continued as general manager.

A new building, to be used as a distributing branch, is now being erected by The Fisk Rubber Co., Chicopee Falls, Massachusetts, at 1326 West Walnut street, Des Moines, Iowa. The company hopes to occupy the new branch early in October.

THE AKRON-STANDARD AUTOMATIC VULCANIZER IS PROVING successful, not only for full molded heavy duty inner tubes but also for smaller tubes. The tube is cured in the correct shape to properly fit the casing, in addition to which curing room costs are lowered.

Sales Promotion Manager Cooper Corporation

Walter E. Baker, the sales promotion manager of the Cooper Corporation, Cincinnati, Ohio, has been associated for years with various organizations in work connected with sales, and is well known in the industry through his connection for the past six years with the Cooper organization.

The Cooper tire factory is located in Findlay, Ohio, and the Cooper battery factory at Madisonville, a suburb of Cincinnati. Through a chain of fourteen subsidiary wholesale branches, operating under the names of The I. J. Cooper Rubber Co., and The Cooper Tire & Battery Co., a wide distribution of tires and batteries and of automobile accessories, equipment, and radio is effected.

W. E. Baker

"Wallie" Baker, who is an Ohio man and a university graduate, left the practice of law when a business career had stronger attractions for him. Aside from playing slide trombone in Shrine bands and making speeches—his two chief dissipations, he is a writer of recognized ability and a planner of advertising and selling campaigns that promote the progress and prosperity of the Cooper organization.

The Rubber Trade on the Pacific Coast

While summer business was disappointing to many Pacific Coast rubber manufacturers and representatives of several large concerns in the Eastern and Middle States, on the other hand some report a decided increase in sales. One Akron concern secured an order in September for pneumatic bus tires that will total over $100,000, the bid for supplying the tires being about 25 per cent below that of a Pacific Coast competitor. In September also an eastern concern got an order for conveyer belting for an Arizona copper mine that will exceed $22,000. On the other hand a Pacific Coast rubber manufacturer is distributing garden hose throughout the south and east, and even sending it in carloads into Akron, suggesting the carrying of coal to Newcastle. Yet much hose made in Massachusetts is also sold on the Pacific Coast. The general impression here is that trade will be very good this fall and that the year's total with all substantial concerns will show an excellent increase over the 1925 total.

The Eno Rubber Co., for many years at 1026-1032 South Los Angeles street, Los Angeles, California, having moved its factory equipment into the plant of the Hendrie Tire & Rubber Co. at Torrance, which it bought recently from the Thropp interests, has moved its city office and warehouse to 1726 South Los Angeles street.

J. E. Whigam, formerly connected with the Keaton Tire & Rubber Co., San Francisco, has bought full control of the Thompson-Whigam Tire Co., a large tire distributing concern at 1334 South Flower street, Los Angeles, California.

J. K. Hough has been appointed general sales manager for The Goodyear Tire & Rubber Co., Los Angeles, California, and with President John W. Mapel has been visiting the parent plant in Akron for several weeks. Production at the California plant for mid-September averaged 6,500 tires and 7,000 tubes daily.

Exhibits of rubber insulated and other wire were made by the Crescent Insulated Wire & Cable Co., Trenton, New Jersey; Westinghouse Electric Co., East Pittsburgh, Pennsylvania; and the Marion Insulated Wire & Rubber Co., Marion, Ohio, at the Fourth Annual National Radio Exposition in the Ambassador Auditorium, Los Angeles, California, September 5 to 11.

Featuring very largely rubber goods for oil fields, the West American Rubber Co., 400 North Avenue 19, Los Angeles, California, is running to full capacity, and is planning further plant extension. One specialty in good demand here and abroad is armored 5-ply fabric oil well hose, 2½ inches in diameter, and tested to over 2,000 pounds. Warco slush pump packings, Whalite water valve inserts, tire repair supplies, heels, and general mechanicals are among the other products.

D. I. Raymond, recently representative in the Spokane territory of the Firestone Tire & Rubber Co., Akron, Ohio, has been appointed manager of the Firestone branch in Portland, Oregon. C. R. McCaslon, representing R. J. Cope, southwest branch manager for Firestone in Los Angeles, California, has been spending the past month visiting leading tire distributers in the lower Pacific Coast territory.

After an aggressive nation-wide advertising campaign, coupled with good canvassing by its salesmen, the Pioneer Rubber Mills, San Francisco, California, reports that it is crowded with orders for execution this fall. It is working 24 hours a day in most of the departments, has just finished a large addition to its steam plant, and is planning considerable improvements and extensions to the works.

The Chanslor & Lyon Tire & Rubber Co., which succeeded the King Tire & Rubber Co. (formerly V. K. Sturges Co.), is very busy at its factory in Oakland, California. Several sizes of balloon tires have been added to the line carried by the company, which is one of the largest automobile accessory concerns in the West.

A lively demand is reported for rubber-covered rolls, non-slip pulleys, conveyer and elevator belting, and mechanical rubber goods generally by the American Belting & Hose Co., Portland, Oregon. C. R. Griffith is president and general manager; F. T. Griffith, vice president; and L. P. Griffith, secretary and treasurer.

The Samson Tire & Rubber Corp., Los Angeles, California, reports that business has more than doubled in the past three months. The company has completed a large extension to its machine shop, is now making most of its tire molds, and is erecting a large addition to its warehouse. The Compton plant capacity has been doubled four times within three years. Four of the largest distributers in the Midwest were added last month to the company's merchandising roll.

Within the past year the Columbia Tire Corp., Portland, Oregon, progressed from one 8-hour shift and part time to three 8-hour shifts and full time, according to President R. A. Wurzburg. The company cultivates good relations with its operatives by encouraging them to act as understudies in all departments, and consistently making all promotions, where possible, from its own force instead of from outside.

The Coast Tire & Rubber Co., Oakland, California, has quadrupled its tire sales since last March, when the company began selling directly to customers from its own stores on the Pacific Coast. Since reorganization two years ago the company has paid $200,000 in bank debts, increased its working force from 35 to 140, and its output from 50 to 400 tires a day with 400 tubes. Recently a contract was made to supply one concern with 46,350 tires at the rate of 150 a day. According to President J. C. Hughes, 200 tires are being made daily for Star (Durant) automobiles assembled in Oakland.

The Columbia Tire Corp. of Portland, Oregon, reports an increase in its tire sales of 60 per cent for June, 1926, as compared with June, 1925. One of its new dealer organizations is the L. E. Titus Co., State street, Seattle, Washington, which also maintains five branches in the state, these being at Olympia, Aberdeen, Centralia, Hoquiam, and Tenino.

According to J. E. Berkheimer, receiver for the Sound Rubber Co., Tacoma, Washington, there is a good prospect that the plant will be put into operation soon. W. E. McCormish, formerly of

Akron, Ohio, has been formulating plans for organizing a new corporation. The factory has a good equipment for making tires and tubes.

Morris L. Henderson, for the past thirteen years associated with the Goodyear Tire & Rubber Co., Akron, Ohio, has been placed in charge of the company's branch at Spokane, Washington. Mr. Henderson was for a time in Australia and New Zealand on service work for the Goodyear organization.

T. D. Struthers, formerly sales manager of the Williams Tire Co., is now connected with the Mohawk Rubber Co., Akron, Ohio, as manager of its Los Angeles, California, branch.

Spreckels "Savage" Tire Plant Closed

The plant of the Spreckels "Savage" Tire Co., San Diego, California, has been closed by order of the executors of the late John D. Spreckels' estate. During the past two years, about $500,000 worth of equipment had been added to the factory, which had a daily capacity of 3,000 tires, and was said to be on a profitable basis. Landis D. McConnell, former general manager, has accepted a position in the production department of the Coast Tire & Rubber Co., Oakland, California.

The Rubber Trade in Canada

According to manufacturers, the rubber situation is easy, demand is excellent at present quotations, and there is no reason to assume there will be any immediate alteration in prices. The crude rubber market appears to be stabilized, at least for the present quarter.

September 8 a reduction on bicycle tires and tubes became effective, averaging about 10 per cent. Fall deliveries of rubbers are now going on and prices are where they were six months ago. Samples of tennis shoes for next spring are due any day now. Tennis has not been a very profitable line to either the jobber or retailer for the last few years, owing to a mania for price cutting which developed as a result of keen competition among both the wholesale and retail trades.

The latest bulletins issued by the Bureau of Statistics at Ottawa, Ontario, covering July and the first six months of the year, show a steady upward trend in business generally. For the first seven months of 1926 the automobile production was 140,086 units, 33 per cent above the 105,687 made during the same period of 1925; and the value of the cars made, based on selling price f.o.b. plant, was about $17,000,000 over selling value of the cars produced in the first seven months of last year. This year's output to date includes 50,339 open passenger cars, 58,272 closed passenger cars, 18,011 trucks, 13,360 chassis and 104 taxicabs or buses.

A tour of Northern Ontario by members of the Ontario Dominion Credit Men's Association included W. H. Alderson of Gutta Percha & Rubber Ltd., Toronto.

General Distributors, Ltd., Vancouver, British Columbia, has been appointed western Canadian distributers for Hycoe brake lining manufactured by the Manhattan Rubber Manufacturing Co., Passaic, New Jersey.

Attached to every length of garden hose sold by a large dealer in Winnipeg, Manitoba, is a special guarantee tag, the length of time depending on the grade. Sometimes the guarantee is for three years. If the hose fails the customer is entitled to receive the purchase price or a new hose. The tag gives the salesman's name, the date of purchase, length of time guaranteed, and when the guarantee expires.

A wide variety of rubber insulated wires and cables is being manufactured by the Standard Underground Cable Co., of Canada, Ltd., Toronto, Ontario.

J. W. Kingsland has joined the selling staff of Ames Holden McCready Rubber Co., Ltd., Montreal, taking charge of the Ottawa territory. The office and sample room are located in Ottawa.

In addition to the changes announced in these columns last month regarding the Canadian Goodrich Co., Ltd., Kitchener, Ontario, W. W. Atkinson has been transferred from field sales work to the position of Toronto branch manager.

The name of the Quebec Sales Co., Ltd., Quebec, has now been changed to Quebec Rubber Distributing Co., Ltd.

The Werlich Manufacturing Co., Ltd., Preston, Ontario, who make baby carriages, tea wagons, and rubber tired disk wheels, has purchased a site on Bishop street, adjacent to the Grand River Railway tracks, and will build a new plant.

In the New Toronto Day celebration parade held recently by the business men of New Toronto, the float entered in the Industrial Section by the Goodyear Tire & Rubber Co., of Canada, Ltd., won first prize, a silver loving cup.

Don Carrick, Canadian amateur golf champion, drove a ball with carry estimated at 250 yards on the Rosedale course at Toronto, recently, with his father Col. J. J. Carrick, president of the Lee Puncture Proof Tire Co. of Canada, Ltd., Lachine, Quebec. It is said that this feat has never before been performed on the course.

Miner Rubber Co., Ltd., Montreal, is exhibiting at the National "Produced-In-Canada" Exposition to be held in Montreal October 9 to 16. This firm also had a splendid display at the Sherbrooke Quebec Fair.

Servus Rubber Products, Ltd., Windsor, Ontario, is advertising Servus rubber soles in a restricted list of Canadian publications.

Gutta Percha & Rubber Ltd., Vancouver, British Columbia, which was burnt out recently, has taken up temporary offices and is arranging for renewal of business at other locations pending the decision to rebuild on the old premises.

At the recent Canadian National Fair in Toronto, the Transportation Building housed attractive exhibits of the following leading rubber manufacturers: Dominion Rubber System (Ontario), Ltd., Goodyear Tire & Rubber Co. of Canada, Ltd.; Dunlop Tire & Rubber Goods Co., Ltd.; Gutta Percha & Rubber Ltd. In the Coliseum (West Annex) exhibits were made by Wingham Rubber Co., Ltd.; and Canadian Goodrich Co., Ltd.

A recent trade paper announcement of Canadian Goodrich Co., Ltd., Kitchener, Ontario, introducing the new line of "Zipps" (summer footwear) in combinations of rubber with leather and canvas, crêpe rubber soles, etc., stated that "Even now Canadians consume more rubber footwear per head than the people of any other country." Another paragraph mentioned that "Canadians are the greatest outdoor people in the world. They play tennis, jump, run and camp all summer. If there ever was an undeveloped market in the world it is the big athletic summer footwear field."

A trial of a new system for repairing rubber boots is being made by the city of Montreal at the municipal workshops. The firemen and police use heavy rubber boots, which are renewed every three years. However, it is considered that some at least of these boots can be made serviceable again. Tests are being made with repaired shoes and if practical some 800 or 900 pairs of boots, which cost $6 apiece, will be saved annually.

Canada's Tire and Tube Exports

During the first half of the present year Canada's leading markets for pneumatic tires and tubes were the following: Argentina, with a total of 106,206 casings, value $1,588,083, and tubes, 108,310, value $270,392; the United Kingdom, 71,139 casings, value $1,248,927, and tubes, 35,712, value $90,463. Other important shipments went in order to Australia, Germany, Japan, and Sweden. Australia represented the leading customer for solid tires, taking 5,470, value $292,419, followed by the United Kingdom, 9,014, value $274,252; Argentina, 6,410, value $219,112; Cuba, 3,989, value $153,502; and Japan, 6,682, value $147,270. During the six months period Canada exported to all countries 732,324 pneumatic casings, value $13,081,467; 582,116 inner tubes, value $1,660,710; and 56,520 solid tires, value $2,047,642.

The Rubber Trade in Europe

Great Britain

NOTWITHSTANDING the bitterness and many difficulties aroused by the long-continued coal strike, such troubles unfortunately having their effect upon the other industries of England as well, the rubber trade according to recent statistics seems comparatively little affected. The volume of British rubber goods exported is said to be somewhat larger than that of last year, and 50 per cent higher than the figure for the summer of 1924. The total shipments of British rubber manufactures during the first six months of the present year is estimated at £3,915,958, as compared with £3,758,706 for the corresponding period of 1925, while the import figures are £3,883,920 and £3,203,082 respectively. Although these totals represent an increase of 21¼ per cent for imports, and only a little more than 4 per cent for exports, it is interesting to note that exports of pneumatic casings during the period mentioned show a gain of £203,904, or 14 per cent; inner tubes advanced by £45,898, or 15 per cent; and solid tires approximately £19,000, or 9 per cent.

Taking the "Long View" of Rubber's Future

Whether the proposal to pay France's debt to America by placing some of the former country's rubber lands in Cochin China at the disposal of United States financiers be seriously regarded or not, the fact remains that the question of an adequate rubber supply is being more carefully studied than ever by manufacturing nations of the world.

No one can foresee the future of the rubber industry, but there are attempts along such lines by both the producer and the manufacturer. The opinion of the chairman of the Anglo-Dutch Plantations of Java, is quoted in part as follows:

I am not at all sure that the planting of those outside the restriction area will not in five or six years increase the production so largely that the restriction scheme will either have to be withdrawn or be practically of small effect. In short, I think that in five or six years' time it will again be entirely a question of supply and demand. The production will, I believe, be much larger than it is now, unless we find that the trees on the older plantations are suffering from old age. This will very likely be the case, but apart from that our chance of a favorable price in the future depends on the consumption of crude rubber increasing at a higher rate than the normal production.

Successor to the Late Lord Stevenson

Sir Matthew Nathan has been appointed to succeed the late Lord Stevenson as chairman of the Advisory Rubber Committee of the Colonial Office. Born in 1862, he received his first commission in the Royal Engineers in 1880, and was later transferred to India, while in 1895 he became Secretary of the Colonial Defense Committee. Since that time he has been a force in administering certain governmental affairs in Sierra Leone, the Gold Coast, Hong Kong, and Natal. He returned to England in 1910 and was made secretary of the General Post Office, later being appointed chairman of the Board of Inland Revenue. In 1914 he became Under-Secretary to the Lord Lieutenant of Ireland, while in the second year of the war he was made permanent Secretary of the Ministry of Pensions. From 1920 to 1925 he was England's representative in Queensland.

Institution of the Rubber Industry

An advance program of interesting subjects has been prepared for the coming year by the Institution of the Rubber Industry, while during the month of October the leading papers to be read by well-known men are as follows: October 4, London, "The Problem of Rubber Latex Concentration and the Industrial Application of Concentrated Latices," by Doctor Ernst A. Hauser; October 6, Birmingham, "What Is Rubber?" by Doctor Ernst A. Hauser; October 14, Manchester, "A Comparison Between British and American Tire Salesmanship," by F. Webster; and October 18, London, "Advertising," by W. H. Harford.

In collaboration with the Institution of the Rubber Industry, the Northern Polytechnic, Holloway, London, N. 7, announces a number of day and evening courses in rubber technology. Both elementary and advanced work are offered, while in addition short evening courses have been arranged to suit the requirements of salesmen and others similarly interested in the rubber industry. The technical advisers are Doctor P. Schidrowitz, Doctor H. P. Stevens, and B. D. Porritt. The head of the department of chemistry and rubber technology is Doctor T. J. Drakeley. The Rubber Trades School reopens September 14, and on September 27 the Senior Rubber (Day) School and the evening classes in rubber technology. A special short course has been provided for those interested in tire repairing and vulcanization.

International Exhibition Conferences

A series of conferences will be held in connection with the other activities of the Paris International Rubber Exhibition, these conferences taking place every morning except Saturdays, and beginning January 24, 1927. The English Committee now invites papers not exceeding 2,000 words in length, and suggests the following subjects: Problems of Latex and Tapping; Commercial Preparation of Rubber from Latex; Improvement of Stock; Propagation; Manuring; Technical Problems of the Manufacturing Industry; and New Industrial Uses for Rubber. Papers must be sent in before December 1, 1926, addressed to the Secretary, Conferences Committee, Paris Exhibition, 43 Essex street, Strand, London, W. C. England.

British Notes

Crêpe Sole Rubber, Ltd., 24-25 Great Tower street, London, E. C., has been capitalized at £52,500 and will continue in London and Northampton the business of rubber merchants as formerly maintained by Macadam, Reith & Co., as well as assuming the assets of Crêpe Sole Rubber (Plantation-Finished), Ltd.

Fibrok Products (1926) Ltd., capitalized at £8,100, will continue the business of manufacturers, importers, exporters, brokers and dealers in rubber, rubber latex and rubber goods of all kinds, as well as Fibrok products, ebonite, etc. The company maintains offices at 10 Fenchurch avenue, London, E. C.

Binney & Smith, Ltd., has been formed for the purpose of manufacturing and dealing in carbon black, lampblack, by-products of oil, pigments, colors, etc., for the use of the rubber industry.

An important feature of the Textile Exhibition held in connection with Manchester Civic Week, October 2-9, will be the section devoted to the waterproofing industry, a branch of trade established in that city over a hundred years ago.

Buckleton & Co., Ltd., moved on August 1, 1926, into more commodious quarters at 20 Chapel street, Liverpool.

The Leyland & Birmingham Rubber Co., Ltd., is announcing a ten per cent dividend on its common stock. Last year's bonus of 2½ per cent, added to the 10 per cent dividend, is not however to be repeated this year. For several years, beginning with 1915-16, the company paid 15 per cent on its common stock, while in 1919-20 a share bonus of 25 per cent was given. Ten per cent dividends were also paid during the three years following 1921-22. The profit in 1924-25 was £98,681, the reserve fund totaling £80,000.

Germany

Statistics for the German rubber industry during the first half of 1926 strikingly illustrate the decrease in imports of crude rubber during that period as compared with 1925.

Whereas imports of crude during January-June, 1925, were 221,631 quintals, they were only 94,980 quintals for the 1926 period, a decrease of 126,651 quintals or almost 60 per cent. At the same time the values were 80,035,000 marks and 52,113,000 marks respectively, showing a decrease in value of about 34 per cent. Gutta percha imports were 1,488 quintals in 1926 against 1,194 in 1925; balata imports fell from 3,480 quintals to 1,948 quintals in 1926. The total imports of waste were 16,735 quintals in the 1926 period and 47,168 quintals in 1925. It is interesting to note that whereas America supplied 26,091 quintals of waste in 1925, she supplied only 11,816 quintals in 1926 while on the other hand exports of waste from Germany to America which in 1925 were only 1,699 quintals rose to 12,173 quintals in the 1926 period.

Exports of rubber manufactures came to 90,713 quintals, value 53,921,000 marks in the first half of 1926, against 78,295 quintals, value 44,045,000 marks in 1925. At the same time the imports were 11,713 quintals, value 6,434,000 marks, against 10,364 quintals, value 6,542,000 marks the year before.

Among the most important articles in which business was done may be mentioned the following:

	Exports —January-June—		Imports —January-June—	
	1926	1925	1926	1925
Motor tires and tubes (*number*)	266,459	191,324	86,652	15,054
Cycle tires and tubes, other vehicles (*number*)	2,353,613	2,141,605	21,184	8,476
Hose (*quintals*)	8,492	7,711	120	45
Belting (*quintals*)	1,484	1,372	208	171
Footwear (*quintals*)	1,050	1,882	402	229
Rubber thread (*quintals*)	1,067	827	.....	.....
Packing (*quintals*)	1,266	1,428	121	296
Goods of rubberized fabrics (*quintals*)	7,249	7,103	684	3,406
Hard rubber and goods thereof (*quintals*)	4,563	6,064	268	405

Rubber Carpets

A correspondent in the *Gummi Zeitung* suggests and describes a new kind of rubber carpet designed to imitate the color, design and pile of woven rugs. First a soft-rubber sheet about 1 mm. thick and of the desired width and length is rolled on the calender. This sheet is then perforated with a special device, either before or after vulcanization. Next small rubber knots are stamped from previously sprayed round thread in the required colors. The little knots are made with an elongation below having a rivet-like end so that the knots may be threaded and held in place according to the design. This threading is supposed to be done by hand with the help of special pincers. The machinery required in producing these mats could be adapted from those used in the paper industry, it is suggested.

The writer of the article claims that rugs made in the above way would not only be soft, elastic and colorful, but sanitary, easy to clean, cheap, and moth-proof.

Hungary

While four rubber manufacturing companies are known in Hungary, only the Hungarian Rubber Products Factory Ltd., really produces a large variety of goods. This concern recently absorbed the Dr. Doragi company and operates two plants, the output comprising automobile tires and tubes, rubberized fabrics, sheeting, sanitary specialties, aprons, toys and miscellaneous rubber articles.

The Ernest Burian Rubber Trading Co. operates one plant producing rubberized waterproof fabrics and another plant where imported rubberized fabrics are converted into clothing, chiefly raincoats.

The United Rubber Goods Manufacturing Co., is not really a manufacturer but handles raincoats, specialties of rubber and rubberized fabrics, automobile tires and tubes for the Vienna concern, Semperit.

The Hungarian Button & Rubber Goods Co., produces sanitary and medical rubber goods.

Finland

It is reported that the Finska Gummifabriks Aktiebolaget, Nokia, Finland, the only rubber factory in the country, in 1924 added to its works an establishment for reclaiming old rubber and for producing bicycle tires. The latter has been working to capacity since last year. This year, the large scale production of rubber balls was begun. Exporting started in 1924 and comprises chiefly rubber tubes and belts as well as rubber footwear to the neighboring states. The rubber shoe factory, which was enlarged in 1925, has a capacity of 1,200,000 pairs of rubber shoes, 600,000 pairs gymnasium shoes and 60,000 pairs overshoes per annum. The factory at Nokia now employs six engineers and about 700 workers.

Holland

Imports of crude rubber during the first half of 1926 included 1,547 tons of plantation rubber to a value of 4,431,000 guilders. The imports of manufactured goods included 64,104 automobile tires, value 3,329,000 guilders; 49,059 tubes, value 427,000 guilders; motorcyle tires, 2,762, value 50,000 guilders; other tires and tubes, 874,521, value 1,366,000 guilders; footwear, 884,592 pairs, value 799,000 guilders. America led in the imports of automobile tires, though France, Great Britain, Italy and Belgium, in the order named, also supplied large amounts. Belgium and France shipped the greater part of the other tires and tubes, as well as more than half the footwear imports.

Holland's exports of rubber goods included:

	Number	Guilders
Auto tires	2,905	167,000
Auto tubes	2,968	15,000
Other tires	641,327	945,000
Other tubes	206,459	136,000
Solid tires	1,329	335,000

Switzerland

The A.-G. zur Verwertung der "Fit"-Verfahren (company for exploiting the Fit process), has been established at Zurich to retread and repair tires and tubes for automobiles and motor cycles according to the process known as "Fit."

Although there is a good demand here for hospital and sanitary goods and other specialties like children's rompers and rubber and rubberized aprons, very little is manufactured locally, and many lines are not attempted at all.

The firm of Geiser & Co., Emmenau, Canton of Berne, manufactures rubberized sheeting, and rubberized piece goods are produced extensively in Zofingen, Switzerland, but Germany supplies most of the rubber specialties chiefly through the agency of traveling salesmen. France and England also supply a fair amount; American trade is hampered chiefly by high prices and difficulty of communication owing to distance.

Rubber and rubberized aprons retail from 2.90 francs to 10 francs each according to quality, design and material. Sanitary drawers with interchangeable seats range from 5 to 12 and 14 francs, the average being about 6.50 francs ($1.25). Small rubberized aprons for children sell at from 2 to 5 francs. Complete sanitary belts are priced at 3.50 to 4 francs ($0.68 to $0.77).

In certain sections, German aprons predominate owing to their cheapness; they are of medium quality and serve their purpose well enough. The Continental and Radium companies are the chief German sources.

Russia

Russian production statistics, it is learned, show a sudden decrease in output in almost all industries during May, 1926. This set-back is very marked in the rubber industry too, the decrease in the manufacture of galoshes being 32.5 per cent, and of pneumatic tires 39.4 per cent.

The Rubber Trade in the Far East

Malaya

RUBBER producers as a whole are not elated because the 20 per cent cut in exports from August 1 was avoided, for it is questionable whether the cut would have made much difference in output. Both Malaya and Ceylon have failed to fill their export quota for the current restriction year so far, and Malaya particularly has a substantial balance to its credit in the way of permissible exports. In fact, a number of planters have produced not more than 80 per cent of their assessments. Whether this is due to inability to get more out of their trees or whether it has been done of set purpose in order not to strain an already weak market, is a question as yet unanswerable.

While a 20 per cent reduction would not have affected the quarter's output to any appreciable extent, the psychological effect might have sent prices to higher levels. However, far-sighted people who have the welfare of the industry at heart are genuinely glad that there has been no decrease in the exports allowable, as a false situation might thereby easily have been created.

Shortage of Rubber 1928-30?

The failure of planters to produce up to standard leads to the question whether or not a shortage is in sight about 1928-1930. The former editor of the *Straits Times*, A. W. Still, has repeatedly declared that up to the present there has been no real shortage of rubber, the recent high prices being the result of scare buying and speculation. But he does look for a real shortage about 1928-1930, based on the following: Owing to the slump little new planting was done after 1920; numbers of small estates were over-tapped or abandoned; therefore, there will be very little extra rubber available to cover natural increase in consumption and the increased demand that is bound to come from Europe, which is gradually rehabilitating itself. In addition, rubber is finding more uses and users daily all over the world. America stands as the example of what a large amount of rubber a single country can absorb. And for the present the per capita consumption of rubber in other countries is very far behind that of America.

To be sure, there will not be much new rubber available from Malayan estates, because there was not enough new planting done at the proper time. Also Dutch native rubber exports have been checked, as was expected they would be, and people like to believe this was caused by severe over-tapping, so that new plantings here will only be a replacing of the trees now ruined. As for the Dutch European estates, most people are convinced that in their way they are no better off than the native holdings and for the same reason—heavy over-tapping.

It is not reasonable to believe that the European rubber planters in the Dutch colonies would ruin their prospects for the sake of a little more present gain. However, granted that little is to be expected from these sources, the *Malayan Tin & Rubber Journal* asks what will the condition of the consumers be in two to four years from now. More than one writer has warned that no further increases of importance are to be expected from American buying, as consumption has about reached saturation point. The paper quoted above doubts that the unusual prosperity ruling in America, on which rubber buying hinges, will continue much longer. This prosperity is chiefly based on a system of unlimited and indiscriminate extension of credit which must give way in the near future, and then where will the great American consumption be! But this is not all. While Germany may be picking up, France has "yet to go through her Garden of Tears," it considers.

Sir Frank Swettenham, who knows Malaya and the rubber industry if anyone ever did, speaking at the dinner given by the Incorporated Society of Planters in London, said that the future lies in the hands of those who own rubber properties, and have the means and desire to extend them, and added, "that if they extend planting very considerably they must not be surprised if the production of rubber became greater than the world's consumption and prices fell below profitable production."

Kajang Central Rubber Factory

F. G. Smith, Secretary of the Rubber Growers' Association, who recently made a tour through Malaya, describes the Kajang Central Rubber Factory. This was started in 1911 as a central factory to deal with the output from six large estates and at one time there were 17 estates sending rubber, but since the six original estates, which own the factory, now require nearly all the machinery for eight hours a day, all except two of the other estates have been eliminated. The area of rubber served by the factory is some 12,000 acres.

When certain additions have been made to the equipment, the plant will be able to machine 420,000 pounds of first latex crêpe and 65,000 pounds of lower grades per month.

The factory is a cooperative concern and does not look for profit; only sufficient is charged to cover working costs and provide funds for extension. In normal times the cost of delivering rubber to the railway station, including packing materials, packing, curing, insurance, wages, salaries (with leave pay and passage to England), in fact everything connected with the factory, is a little under three cents (Straits currency) per pound dry weight.

Malayan Statistics

Total exports of crude rubber up to the end of July, 1926, were 210,312.14 tons against 169,425.81 tons in the first seven months of 1925. The foreign imports were 81,557.70 tons for the 1926 period against 89,229.21 tons in 1925. The native imports which had been below those of 1925 all along seem to be picking up again. At all events, the July imports were 15,280.12 tons against 11,764 tons in June. Latex shipments during July were 141,370 gallons, from January to July, 1926, the latex exports amounted to 1,586,725 gallons.

Carryover of 40,000 Tons

Restriction statistics show that the balance left after deducting from the amount exportable, the amount actually exported during July was 25,649 tons for the Federated Malaya states, 6,065 tons for the Straits Settlements, 9,819 tons for Johore and 1,847 tons for Kelantan. That is, there is a total carryover now of 43,380 tons, not including amounts from Kedah and Trengganu from which states figures have not yet been available.

Ceylon

According to figures supplied by the Rubber Controller, Ceylon exported in July, 1926, 4,422 tons of Ceylon grown rubber out of a total permissible quantity of 5,873 tons. The amount of rubber reexported was 242 tons. In July, 1925, the exports were 3,749 tons of locally grown rubber and 389 tons reexports.

The latex shipped from Ceylon during July of the current year came to 1,200 gallons.

It is officially announced that in consequence of reassessments made on claims received before April 1, 1926, the standard production of estates for the period November, 1925, to October, 1926, has been increased from 68,639 tons to 70,475 tons.

This increase is rather puzzling since from at least the beginning of the current restriction year, that is from November, 1925, to the end of July, 1926, Ceylon has month by month consistently failed to come up to her quota of permissible exports of crude rubber.

Netherlands East Indies

In the *Algemeen Landbouwweekblad voor Nederlandsch-Indië*, there is a rather belated but no less interesting discussion of the revision of the basic price in the restriction scheme. The writer quite frankly states that those benefiting most are the Dutch and native planters. But gratifying though this is to the Dutch, an impartial view of the situation cannot lead to any other conclusion than that the raising of the basic price to 1*s* 9*d* is going too far. Such a price is too high to be considered as justified protection; it is a monopoly price which will certainly not be accepted by American rubber consumers, and it finds that American import figures show that Hoover's fight is succeeding already.

Milling Native Rubber

The Department of Agriculture has in hand several applications for the erection of factories for remilling native rubber, including Firestone for one factory at Palembang and one at Djambi (both Sumatra); the Internationale for a factory at Palembang; and the Rubber Syndicate or Union, for five factories, at Bandjermassin, Pontianak (both in Dutch Borneo), Palembang, Djambi and Tapanoeli (all Sumatra). Referring to the Rubber Syndicate or Union, the report concerning its plans published in these columns in the September issue of *The India Rubber World* is hereby confirmed.

Production and Planted Area—1925

Official statistics show the total output of dry rubber in the Netherlands East Indies in 1925 was 192,159 metric tons (metric ton—2,204 pounds). Of this 44,943 tons were produced on European estates in Java, 61,548 tons on estates in the outer possessions (chiefly Sumatra) and 86,118 tons dry, on native holdings in the outer possessions. The native rubber includes 2,666 metric tons of Ficus rubber. The total native output thus was only 19,923 metric tons, less than the total European output of 106,041 metric tons (44,493 tons and 61,548 tons).

The estimates for European outputs for 1926 are put at 118,600 metric tons for the entire Dutch East Endies, the share of Java being computed at 49,900 tons. There are no official estimates available for 1926 native production.

The European output was produced on 751,892 acres of mature rubber land, the total planted area at the end of 1925 being 1,025,429 acres. The average yield per acre works out at 311 pounds.

New plantings in 1925 were: 24,471 acres in Java and 30,546 acres in the outer possessions, in all 55,017 acres. These figures, of course, do not cover additions to native rubber holdings, exact figures for which are not available, though they are known to be considerable.

In view of frequent recent discussions concerning expected shortages of rubber due to insufficient planting during the slump period and immediately after, it is deserving of notice that the statistics also show that 218,520 acres of European style estates planted before 1925 are expected to come in bearing by 1930.

Exports First Quarter 1926

Java and Madura exported a total of 14,036,693 kilos of rubber during the first quarter of 1926. This included 13,953,350 kilos, value 51,170,428 guilders of plantation rubber in sheets; 55,933 kilos, value 54,490 guilders, of sprayed rubber or latex; 27,410 kilos, value 21,291 guilders, of Ficus rubber in balls.

In addition, 26,307 kilos, value 141,083 guilders of plantation gutta percha were shipped during the first quarter of 1926.

Netherlands East Indian Notes

West Coast of Sumatra, hitherto rather neglected by investors, is attracting more attention now. Large extensions were made in 1925 and at the beginning of 1926 the Java Rubber Mij acquired three plantations planted with rubber, rubber and coconuts and rubber and coffee respectively. The Koloniale Bank is interested in acquiring a connected area of from 20,000 to 30,000 bouws (bouw —1.75 acres) and has bought coconut and coffee plantations and lease plots with this end in view. Exports of rubber from this territory were 891 metric tons in 1924 and 3,185 metric tons in 1925.

Dr. J. G. J. A. Maas, formerly head of the Agricultural Department of the Experiment Station of the A. V. R. O. S. (General Rubber Association East Coast of Sumatra), has been appointed a superintendent of the Government Rubber Industry, Buitenzorg, Java.

The Commercial Association, Medan, reports only a slight increase in rubber exports from East Coast Sumatra during the first quarter of 1926 as compared with 1925, while shipments of latex have practically ceased.

The Zuid-Preanger Rubber Mij intends to extend its holdings with four large Hevea plantations.

Rubber and Gutta Exports

Official statistics for the exports of rubber from the Netherlands East Indies now include net weight of native rubber from parts of the colonies outside of Java, Madura and the East Coast of Sumatra. The figures following cover the first half of 1926 and are in long tons.

NATIVE RUBBER EXPORTS

	Java	East Coast Sumatra	Other Dutch East Indies	Totals Long Tons
January	4,397	6,277	8,081	18,755
February	4,474	5,734	6,801	17,009
March	4,865	5,612	11,880	22,357
April	4,522	4,598	6,208	15,328
May	4,742	5,293	8,606	18,641
June	4,762	5,852	9,550	20,164
Totals	27,762	33,366	51,126	112,254

A loss of ⅓ of weight must be deducted from the native rubber when calculating the dry amount, so that the total dry weight is some 95,000 tons.

Wild gutta percha exports showed a decrease of 9 tons over the year 1925 as against 1924, the figures being 1,369 and 1,378 tons respectively. Of this, 60 per cent went to Singapore in 1924 and 40 per cent in 1925. On the other hand, shipments to America rose from 367 tons in 1924 to 855 tons last year. This gutta percha was shipped chiefly from Borneo ports.

Gutta jelutong showed a still greater decline, the figures being 1,526 tons and 2,355 tons for 1925 and 1924 respectively, a reduction of over 800 tons. The third type of wild gutta known as gutta hangkang likewise decreased, the exports being 1,452 tons in 1925 against 1,742 tons in 1924. The last two types also came from Borneo mainly, while Singapore and America were the chief countries of destination.

Tabulated, this data appears as follows:

	1924	1925
Gutta percha	1,378	1,369
Gutta jelutong	2,355	1,526
Gutta hangkang	1,742	1,452

China

According to the quarterly trade returns for Canton, the amount of rubber and gutta-percha footwear imported into Canton during 1925 represented a value of $6,331, in comparison with $8,021 in 1924 and $4,260 in 1923.

Rubber soles were extensively used in Canton until a few years ago when the belief became prevalent that rubber-soled shoes were injurious to health.

At present there are twelve small factories in Canton and the suburb of Honan which manufacture rubber soles, four of which are estimated to have a daily average output of one thousand pairs.

American rubbers find a good sale in the long rainy season and the prevailing retail prices are $1.85 for men's rubbers and $1.55 for women's.

There seems to be no prejudice against rubber heels. Both American makes, quoted at $0.20, and Japanese, priced at $0.10, are on the local market.

Rubber Patents, Trade Marks and Designs

The United States

August 10, 1926*

1,595,182 Wheel and tire. Glen E. Fravel, Portland, Oregon.

1,595,190 Gasket. Dell F. Harbaugh and Charles O. Moore, assignors to Atlantic India Rubber Works, all of Chicago, Illinois.

1,595,216 Means for securing heel lifts on shoes. Ralph E. Peckham, Detroit, Michigan.

1,595,306 Pneumatic valve control mechanism. Herman T. Kraft, assignor to The Goodyear Tire & Rubber Co., both of Akron, Ohio.

1,595,313 Pneumatic tire. Robert C. Pierce, Belleville, New Jersey, assignor to John R. Gammeter, Akron, Ohio.

1,595,323 Massage instrument. Robert H. Van Sant, Jr., Berkeley, California, assignor by mesne assignments to Van Ess Laboratories, Inc., Chicago, Illinois.

1,595,324 Massage instrument. Robert H. Van Sant, assignor by mesne and direct assignments to Van Ess Laboratories, Inc., both of Chicago, Illinois.

1,595,325 Shampooing bottle cap. Robert H. Van Sant, assignor to Van Ess Laboratories, Inc., both of Chicago, Illinois.

1,595,326 Shampooing bottle cap. Robert H. Van Sant, assignor to Van Ess Laboratories, Inc., both of Chicago, Illinois.

1,595,327 Reenforced applicator cap. Robert H. Van Sant, assignor to Van Ess Laboratories, Inc., both of Chicago, Illinois.

1,595,328 Massage instrument. Robert H. Van Sant, assignor to Van Ess Laboratories, Inc., both of Chicago, Illinois.

1,595,412 Flexible coupling. William C. McCoy and Elmer G. Kimmich, assignors to The Goodyear Tire & Rubber Co., all of Akron, Ohio.

1,595,441 Toy ball. Simon F. Zenger, Covington, Pennsylvania.

1,595,495 Garter button and fastener. Joseph P. Baumgartner, Philadelphia, Pennsylvania.

1,595,507 Hat protector. John W. Erhardt, New York, N. Y.

1,595,516 Drain stopper. Louis Happ, Brooklyn, New York.

1,595,540 Battery filler. Andrew J. Berrien, assignor of one-half to Pierce-Roberts Rubber Co., both of Trenton, New Jersey.

1,595,576 Form fitting mold. Rose Binner Scognamillo, New York, N. Y.

1,595,581 Rubber interior decorative unit. James H. Stedman, Braintree, Massachusetts.

1,595,582 Furniture leg shock unit. James Herbert Stedman, Braintree, Massachusetts.

1,595,671 Spring suspension cushion connection. Fred L. Lipcot, assignor to The Rubber Shock Insulator Co., Inc., both of New York, N. Y.

1,595,698 Air cushion. Evelyn M. Wilcox, Stamford, Connecticut.

1,595,926 Blowout patch. Thomas L. Reandeau, Lead, South Dakota.

August 17, 1926*

1,596,016 Apparatus for coating preserve boxes or tins. Jacques Jules Joseph Guillemin, Conflans-Ste-Honorine, France.

1,596,071 Tire swing. Frederick B. Spross, Bergen, New York.

1,596,113 Athletic harness and hernia support. Samuel D. Monroe, Panama City, Florida.

1,596,430 Bevel cut patch. Jacob G. Bross, San Gabriel, California.

1,596,573 Bathing suit safety attachment. John Beaulieu and Ernest Conners, Everett, Washington.

1,596,731 Resilient tire. John Allen Heany, assignor to Heany Laboratories, Inc., both of New Haven, Connecticut.

1,596,800 Toy balloon. Henry Burgert, assignor of one-half to Nicholas Blake, both of Oshkosh, Wisconsin.

1,596,811 Fountain pen filler. Albert Craig, assignor of one-third to James P. Longo, and one-third to George Schaudel, all of New York, N. Y.

1,596,814 Combined stocking and overshoe. Bertha R. Dodge, Brooklyn, New York.

1,596,852 Balloon boat. Ralph C. Foster, assignor to The Faultless Rubber Co., Both of Ashland, Ohio.

August 24, 1926*

1,597,140 Toy fly killer. Ward Barto, Cedar Rapids, Nebraska.

1,597,308 Football. John W. Brandt, Elyria, Ohio.

1,597,381 Cushion tire. Henry M. Lambert, Portland, Oregon.

1,597,414 Water closet seat bumper. Howard C. Leslie, Milton, Massachusetts.

1,597,473 Tire blowout patch. Max Nitzsche, Orange, New Jersey.

1,597,657 Horseshoe. Albert D. Cartwright, Toledo, assignor to The Road Grip Horse Shoe Co., Columbus, both in Ohio.

*Under Rule No. 167 of the United States Patent Office, the issue closes weekly on Thursday, and the patents of that issue bear date as of the fourth Tuesday thereafter.

August 31, 1926*

1,597,775 Resilient tire. Lanious P. Erb, assignor of one-third to Joe Matelich, both of Anaconda, Montana.

1,597,945 Vacuum tire patch. Edward O. Young, Cleveland Heights, Ohio.

1,598,151 Tire boot. Everett A. Quick, Springdale, Arkansas.

1,598,211 Advertising balloon. Eustace J. Maguire, San Francisco, California.

1,598,283 Draining device. Justus R. Kinney, Jamaica Plain, Massachusetts.

1,598,284 Draining device. Justus R. Kinney, Jamaica Plain, Massachusetts.

1,598,315 Submarine sound receiver. Cyril Percy Ryan, Droxford, assignor to Vickers, Ltd., Westminster, both in England.

1,598,356 Cushion heel. Sam Houston Manning, Conroe, Texas.

1,598,505 Paving and surfacing material. Cyril Edward Ramsden, Stoke-on-Trent, England.

September 7, 1926*

1,598,659 Rubber boot. William F. Rouse, Akron, Ohio, assignor to The B. F. Goodrich Co., New York, N. Y.

1,598,757 Inflatable ball. Archibald J. Turner, assignor to Wilson-Western Sporting Goods Co., both of Chicago, Illinois.

1,598,809 Boot cushioning device. Karl Dressel, Erfurt, Germany.

1,598,828 Inflatable toy. Walter J. Leatherow, assignor to Howe Baumann Balloon Co., both of Newark, New Jersey.

1,598,865 Projectile for games. Charles V. Limerick, Hamilton, Ohio.

1,598,873 Finger piece for writing instruments. William Petterson, Oakland, California.

1,598,878 Overshoe pattern. Walter E. Piper, Sudbury, Massachusetts.

1,599,011 Garter. Gerhard Hohn, Goslar, Germany.

1,599,096 Eyeshade. Louis H. Marks, assignor to Morris, Mann & Reilly, Inc., both of Chicago, Illinois.

1,599,114 Detachable tire protector. Charles M. Clement, San Rafael, California.

1,599,314 Tire lock. Frank Ellison Best, assignor to Frank E. Best, Inc., both of Seattle, Washington.

The Dominion of Canada

August 24, 1926

263,686 Inflatable toy. Edward Barringham, Toronto, Ontario.

263,723 Tire. Sophus Fridtjof Jebsen, Slemdal, near Oslo, Norway.

263,766 Hat guard. Frederic William James Wolff, Victoria, British Columbia.

263,847 Resilient tire. Lanious P. Erb and Daniel A. Graham, assignee of one-half, both of Anaconda, Montana, U. S. A.

August 31, 1926

263,860 Needle holder. Edwin Gripper Banks, Waihl, Auckland, New Zealand.

263,880 Cushion tire. Ernest Hibbert, Goulburn, New South Wales, Australia.

263,941 Fibre manufacturing apparatus employing rubber belt. Robert Boby, Ltd., Bury St. Edmunds, assignee of Sidney Allingham, London, E. C. 4, and Maurice Soenens, Bury St. Edmunds, County of Suffolk, all in England.

263,965 Rubber and leather sole. The Canadian Stitchdown Co., Ltd., Maisonneuve, assignee of Jean Royer, Montreal, both in Quebec.

263,981 Cushion tire. The Goodyear Tire & Rubber Co., assignee of Richard S. Burdette, both of Akron, Ohio, U. S. A.

September 7, 1926

264,078 Floating shoe. Kichinosuke Hashimoto, Tokyo, Japan.

264,176 Pneumatic tire. The Overseas Tire Cord Co., Wilmington, Delaware, assignee of Daniel Michel Weigel, New York, N. Y., both in U. S. A.

264,221 Heel. Joseph Edwin Markham Cooke, Stafford, England.

The United Kingdom

August 5, 1926

252,772 Acid drum. P. Pick, 1031 Irving Park, Chicago, Illinois, U. S. A.

252,776 Carpet lining. A. Skipsey, Hill Top, White Rose Lane, Woking, Surrey.

252,854 Spring wheel with elastic cushion. A. F. Fabre, 29 Rue Henri IV, Castres, Tarn, France.

252,921 Fountain pen filler. G. Dunkerley, 123, Dulwich Road, Herne Hill, London.

252,929 Sock suspender. A. L. Thomas, 24, Lawrence street, Chelsea, London.

252,940 Lateral splash guards. A. Gallier, 63 Grande-Rue, Asnières, Seine, and G. Coulon, Creaux-les-Baines, Basses-Alpes, both in France.

253,052 Electric cables. Felten & Guilleaume Carlswerk Akt.-Ges., Mülheim, Cologne, Germany.

Chemical patents will be found on page 22. Machinery and Process Patents on pages 25-26

August 11, 1926

253,238 Pneumatic cushion. A. V. Mellano, 6, Queen's Drive, Thames Ditton, Surrey.

253,245 Heel pad. J. Jones, Maesnewydd, Pencaerau, Neath, Glamorgan.

253,250 Auto rubber mounting. L. A. Taylor, 74, Compton Road, Wolverhampton.

253,264 Loom pickers. G. Spencer, Moulton & Co., Ltd., and R. T. Glascodine, 2, Central Buildings, Westminster.

253,284 Furniture supports. G. A. Laughton, Balmoral Works, Bromsgrove street, Birmingham.

253,385 Braces. R. M. Kitto, 41 Kimberley Road, Falmouth.

253,428 Horseshoe tread. Gripshod Patent Horseshoe Co., Ltd., and J. R. Reeve, 37, Cubbington Road, Lillington, Leamington, Warwickshire.

253,472 Collapsible boat. H. Meyer, 15 Geisbergstrasse, and G. Winkler, 13 Wallstrasse, both in Berlin, Germany.

253,485 Electric cables. Felten & Guilleaume Carlswerk Akt.-Ges., Mülheim, Cologne, Germany.

August 18, 1926

253,510* Heel lift. Plyrubber Heel Co., 210 South street, Boston, assignee of C. Roberts, 8 Wedgemere avenue, Winchester, both in Massachusetts, U. S. A.

253,527* Elastic bandages. Lüscher & Bomper Akt.-Ges., Fahr., Rhineland, Germany.

253,636 Pipe joints. E. Bechard, 4 Rue Huntziger, Clichy, France.

253,680 Expanding pulleys. W. Chinn, Longford Road, Chorlton-cum-Hardy, and Chinn's Patents, Ltd., 33 Brazennose street, both in Manchester.

253,691 Insulated cable covers. St. Helen's Cable & Rubber Co., Ltd., Trading Estate, Slough, and H. C. Harrison, Bath Road, Taplow, both in Buckinghamshire.

253,713 Secondary battery support. Hart Accumulator Co., Ltd., and F. J. Holmes, Marshgate Lane, Stratford, London.

253,720 Braces. R. M. B. Smith, Silverside, Bearsden, near Glasgow.

253,773 Latex spout and cup holder. F. V. Boardman, Telephone House, Singapore, Straits Settlements.

253,781 Raincoat. J. Pointner, 1, Hohenzollernplatz, Munich, Germany.

253,787 Pneumatic springs. L. Lege, 1 Drostestrasse, Hanover, Germany.

253,798 Draught excluder. C. F. A. Lauritzen, 7 Nyelandsvej, Frederiksberg, Copenhagen.

253,807 Waterproof garments. D. Bock, Holstenhof, Hamburg, Germany.

253,830 Sock suspender. C. Oswald, 51 Alexandrinenstrasse, Berlin, Germany.

August 25, 1926

254,034 Saddle girth sleeve. J. S. Clay, Auteuil House, East Liss, Hampshire.

254,058 Curtain runner. E. Chalmer, 9, The Crescent, Surbiton, Surrey.

254,069 Mops, etc. A. Hart, 35, Southern Road, Washwood Heath, Birmingham.

254,082 Soap holder buffers. T. H. Tanner 73, Kilmorie Road, Forest Hill, and Valbania, Ltd., Cavendish Engineering Works, Hartington Road, South Lambeth, both in London.

254,119 Wheel tire. R. McMullan, 35, Third avenue, Inglewood, Western Australia.

254,126 Truss. G. W. Welch of Brooks Rupture Appliance Co., Marshall, Michigan, U. S. A.

254,131 Door holder. H. F. Keep, 35, Great Charles street, Birmingham (J. Fowlds, 157, Princes street, Port Elizabeth, South Africa).

254,155 Spring wheels. J. C. Rogers, care United States Carbon Co., Bastrop, Louisiana, U. S. A.

254,170 Garters or hose supporters. C. F. M. Chambers, 2, Lower James street, Golden Square, London.

254,194 Pneumatic tire pressure gage. L. A. Hallstead, 1997 Hertel avenue, Buffalo, New York, U. S. A.

254,217 Life saving suits. A. Meilland, 361 Franklin street, Buffalo, New York, U. S. A.

254,235 Combined container and knife for rubber patching material. E. M. Harris, Sixth street, Riverside, New Jersey, U. S. A.

* Not yet accepted.

New Zealand

July 15, 1926

53,902 Milking machine teat cup claw. Margaret Beatrice Judd, Awarua street, Ngaio, Wellington.

54,582 Milking machine teat cup. William Reginald Cockburn, 8 Seccombe Road, Newmarket, Auckland.

Germany

432,545 (March 19, 1925). Pacifier for infants. Henri Ammann-Hug, Zurich, Switzerland. Represented by Joseph Selinger, Obersdorf b. Immenstadt, Allgäu.

432,986 (May 29, 1925). Perforated leaf-shaped compress of rubber or the like for medicinal or hygienic purposes. Dr. Louis Marie Clement Charnaux, Vichy, Allier, France. Represented by G. Loubier, F. Harmsen, E. Meissner, Berlin S. W. 61.

433,041 (November 22, 1924). Hollow body of rubber particularly for mechanically oscillating devices. Heinrich Schieferstein, Kaiser-Friedrich-strasse 1, Charlottenburg. (Addition to Patent No. 431,852, November 22, 1924.)

Trade Marks

The United States

Two Kinds of Trademarks Now Being Registered

Under the rules of the United States Patent Office, trade marks registered under the Act of February 20, 1905, are, in general, fanciful and arbitrary marks, while those registered under the Act of March 19, 1920, Section 1 (b), are non-technical, that is, marks consisting of descriptive or geographical matter or mere surnames. To be registered under the later act trade marks must have been used for not less than one year. Marks registered under this act are being published for the first time when registered, any opposition taking the form of an application for cancellation.

August 10, 1926, Act of February 20, 1905

216,288 BUCKEYE CORD—inflatable inner tubes and solid and pneumatic tires. Kelly-Springfield Tire Co., New York, N. Y.

216,316 Representation of a radiator in the center of which is the letter: "F"—tires. The Fisk Rubber Co., Chicopee Falls, Massachusetts.

216,346 The word: "CHARMOSETTE" with the representation of a woman bending around the letter: C—elastic webbing textile piece goods. Frederick L. Brigham, New York, N. Y.

216,349 Heavy black circle containing the monogram: DAB—rubber, leather and fabric slippers, etc. D'Andrea Brothers, Inc., New York, N. Y.

216,390 DURA-BILT CORD—tires. Frank & Seder, Inc., Pittsburgh, Pennsylvania.

216,408 BOND CORD—tire casings. The Toledo Tire Corporation, Toledo, Ohio.

216,409 RADIOLITE—electrical condenser plates. Superior Hard Rubber Co., Inc., Butler, New Jersey.

216,438 FITS-ALL—tire flaps. Roy H. Schwartz, doing business as R. H. Schwartz Flap Manufacturing Co., Cleveland, Ohio.

216,440 The word: "NAMEMARK" with heavy underline—tire covers. Parker & Waterman Manufacturing Co., Los Angeles, California.

216,525 ABRAHAM & STRAUS—rubber cloths and mats, etc. Abraham & Straus, Inc., New York, N. Y.

August 17, 1926, Act of February 20, 1905

216,779 SUPRE-MACY—golf balls. R. H. Macy & Co., Inc., New York, N. Y.

August 17, 1926, Act of March 19, 1920

216,794 The word: INGRAM'S, beneath it the word: LONDON—rubber druggists' sundries. J. G. Ingram & Son, Ltd., London, England.

August 31, 1926, Act of February 20, 1905

216,884 GAIRLOCK—golf clubs and balls. Davega, Inc., New York, N. Y.

216,925 Representation of a shield containing the monogram: C B, on one side of the shield a pennant bearing the word: WOLFELT, and on the other side, a pennant with the word: MODELS—shoes, boots and slippers of leather, fabric, rubber, etc. Curt Wolfelt, Inc., New York, N. Y.

216,957 GIRDLON—ladies' hose supporters. George Frost Co., Boston, Massachusetts.

216,985 Representation of a Marathon runner—soles and heels. Marathon Rubber Co., Inc., Akron, Ohio.

216,994 Roy's—tires, tubes, reliners, flaps and tire-tube-patching outfits. Roy's Tire Cave, Inc., Chicago, Illinois.

216,996 QUEEN QUALITY OSTEOS—shoes of rubber, leather, felt, silk, cloth, etc. Thomas G. Plant Co., Boston, Massachusetts.

217,183 Two circular lines enclosing the words: "RIGI-FORM"—shoes of rubber, leather, fabric, etc. The Halle Brothers Co., Cleveland, Ohio.

August 24, 1926, Act of March 19, 1920

217,206 SAVOY—tires and tubes. Gryphon Rubber & Tire Corporation, New York, N. Y.

August 31, 1926, Act of February 20, 1905

217,216 Fanciful design containing the letter: A—automobile steering wheels. American Hard Rubber Co., New York and Hempstead, New York.

217,217 MONITOR—fountain pens. Washington Rubber Co., Chicago, Illinois.

217,218 OLYMPIAN—fountain pens. Washington Rubber Co., Chicago, Illinois.

217,286 Representation of a patch—patches for inner tubes. Bowes Seal Fast Corporation, Indianapolis, Indiana.

217,329 Representation of an oval containing the words: "BIG STORE," "FLYER" and "TRADE MARK"—basket and footballs, etc. The Big Store Co., Cincinnati, Ohio.

217,332 An oblong containing the representation of George Washington beneath which are the words: "THE GENERAL" "RUBBER REPAIR" AND "CHEMICAL PATCH"—tire patch material. The General Rubber Repair Co., Detroit, Michigan.

217,335 SUPER KING—tires. Delion Tire & Rubber Corporation, Baltimore, Maryland.

217,352 Representation of a rubber hand in the center of which is the figure of a man—rubber bands. Charles B. Martin, doing business as Martin Manufacturing Concern, Canton, Ohio.

217,396 RUB-TACK—rubber softeners. Wishnick-Tumpeer Chemical Co., Chicago, Illinois.

217,397 RUB-FLUX—rubber softeners. Wishnick-Tumpeer Chemical Co., Chicago, Illinois.

217,477 Representation of a circle enclosing a golf ball and the word: "MIRACLE"—golf balls and clubs. Wilson-Western Sporting Goods Co., Chicago, Illinois.

217,517 The word: HALLASTIC crossing and forming a cross—surgical elastic bandages. William A. Hall Manufacturing Co., St. Louis, Missouri.

September 7, 1926, Act of February 20, 1905

217,621 TOMMY—raincoats, gloves, shoes, leggings of rubber, canvas, buckskin, etc. Franklin Simon & Co., Inc., New York, N. Y.

217,646 HY-GUN—recoil pads for gunstocks. Jostam Manufacturing Co., Chicago, Illinois.

217,647 HOLLCRAFT—raincoats, etc. C. Crawford Hollidge, Boston, Massachusetts.

217,669 Representation of a mill at the top the word: "MILWATA," at the bottom the words: "GUARANTEED WEATHERPROOF"—mackintoshes and showerproof coats, cloaks, capes, etc. H. E. Mills, Ltd., London, England.

217,724 Representation of a bird cage containing two birds, above the word: LUVBURD—shoes of leather, rubber, fabric, etc. Posner Hosiery, Inc., New York, N. Y.

217,725 Representation of a bird cage containing two birds, above the words: POSNER'S LUVBURD—shoes of rubber, leather, etc. Posner Hosiery, Inc., New York, N. Y.

217,727 Square at the bottom of which are the words: STATES SHIRT SHOPS, above these words a diamond containing the letters: S.S.S.—garters. George G. Bachman, doing business as States Shirt Shops, Norfolk, Virginia.

217,770 CINDERELLA—garters. Martin-Page Co., Middlesboro, Kentucky.

217,784 HEADLIGHT—workingmen's gloves of leather, rubber, etc. Larned, Carter & Co., Detroit, Michigan.

September 7, 1926, Act of March 19, 1920

217,824 MODELL'S—raincoats, ponchos, shoes of leather, rubber, fabric, etc. Henry Modell, doing business as Modell's, New York, N. Y.

217,837 STIEFEL'S WHERE QUALITY IS GREATER THAN PRICE—raincoats, etc. Stiefel's Green Bay, Wisconsin, and Ottawa, Illinois.

The Dominion of Canada

Registered

August 17, 1926

40,321 Word: "AIRUBBER," and representation of a galley with a large sail and having a background of clouds, enclosed in a circular device—cushions, mattresses, swimming devices, hot water bottles and other inflatable and rubber products. Airubber Corporation, Chicago, Illinois, U. S. A.

August 24, 1926

40,338 Word: "SUPERFLITE"—golf supplies. The North British Rubber Co., Ltd., Toronto, Ontario.

The United Kingdom

August 4, 1926

469,330 VILMA—high heeled rubber boots. Dominion Rubber Co., Ltd., 47 Farringdon street, London, E. C. 4.

470,225 DENISCOTE—waterproof and rainproof clothing. Reuben Black and James Lowe, Shudehill Chambers, Shudehill, Manchester.

470,870 PUNCURE—puncture sealing compositions. Henry Percival Worwood, trading as The Auto Manufacturing Co., 76a Aston street, Birmingham.

August 11, 1926

468,583 FORMAPEX—insulating materials for electrical purposes. The Ioco Rubber & Waterproofing Co., Ltd., Netherton Works, Netherton Road, Anniesland, Glasgow.

469,578 ELIDA—goods manufactured from rubber and gutta percha. Otto Dillner, 30, Torgauerstrasse, Leipzig-Neusellerhausen, Germany (Boult, Wade & Tennant, 112, Hatton Garden, London, E. C. 1).

470,109 CARNA—surgeons' rubber gloves. Leo Schwanenflügel Aktieselskab, Soborg, Copenhagen, Denmark (Max Mezger, 25, Bloomsbury Square, London, W. C. 1.

471,378 ARCANA—goods manufactured from rubber and gutta percha. J. Jackson & Co., 7, Suffolk street, Birmingham.

August 18, 1926

467,963 Representation of two knights standing on each side of a circle which encloses the head of a lion and the words: PRIMA ELASTIC—elastic goods. Fritz Barth Gesellschaft Mit Beschränkter Haftung, Märkischestrasse 125a, Barmen-Wichl, Germany (Clement Lean, Thanet House, 231, Strand, London, W. C. 2).

468,357 GRASSELERATOR—chemical substances for use in accelerating the vulcanization of rubber. The Grasselli Chemical Co., 1300 Guardian Building, Cleveland, Ohio (Marks & Clerk, 57, Lincoln's Inn Fields, London, W. C. 2).

468,851 GOPA—tips and heels for boots and shoes. The Goodyear Tyre & Rubber Co. (Great Britain), Ltd., Chelsea Wharf, 15, Lots Road, London, S. W. 10.

August 25, 1926

471,492 DUCTAIRE—tubular hose. The Leyland & Birmingham Rubber Co., Ltd., 24, Duke street, Aldgate, London, E. C., 3.

471,493 PETROMER—tubular hose. The Leyland & Birmingham Rubber Co., Ltd., 24, Duke street, Aldgate, London, E. C. 3.

471,603 WEXAM—soles, heels, tips and pads for boots and shoes. Wood-Milne, Ltd., 2, Central Buildings, Westminster, London, S. W. 1.

September 1, 1926

468,789 Fanciful design enclosing the representation of a tennis net, ball and large letter "D"—balls and apparatus for tennis, Badminton and squash. F. A. Davis, Ltd., Brooke's Market, Brooke street, London, E. C. 1.

469,752 STELENITE—electric insulators. St. Helen's Cable & Rubber Co., Ltd., Bath Road, Slough.

471,914 Double circle enclosing the representation of an athlete about to throw a ball—goods manufactured from rubber and gutta percha. Attwater & Sons, Hopwood street Mills, Hopwood street, Preston, Lancashire.

Designs

The United States

70,805 Balloon toy. Term 14 years. Joseph Sauer and Joseph Schindel, Philadelphia, Pennsylvania.

70,888 Tire. Term 14 years. Albert H. Mueller, Pacific, Missouri.

70,940 Tire tread. Term 3½ years. Howard McKinley Bradford, assignor to Steinbrenner Rubber Co., both of Noblesville, Indiana.

70,955 Tire tread. Term 7 years. Fred D. Fowler, assignor to Hood Rubber Co., both of Watertown, Massachusetts.

Germany

955,509 (July 8, 1925). Multiple-wire rubber tube conduit with increased resistance to strain. Siemens-Schuckertwerke G. m. b. H., Berlin-Siemensstadt.

955,512 (November 11, 1925). Insertable rubber heel. August Schöning, Lanenburg a. d. E.

955,543 (June 5, 1926). Rubber heel. Rudolf Löffka, Brigittenstrasse 5, Altona a. d. E.

955,623 (June 16, 1926). Rubber insert for sporting trousers. Mommine Andresen, Niebull, Schlesw.

955,676 (May 25, 1926). Woven, shirred (pleated) rubber band. Vereinigte Gummiband-Webereien Tillmanns, Schneiwind & Schmidt, Elberfeld.

955,705 (June 12, 1926). Exchangeable rubber heel. Konrad Droullier, Wulfeshohl 2, Barmen-Langerfeld, and Paul Droullier, Heckinghauserstrasse 159, Barmen-Rittershausen.

955,902 (June 15, 1926). Rubber tube conduit with two inserted hemp carrying cords for tension relief. Paul Jordan, Gravelottestrasse 13, Berlin-Steglitz.

956,017 (June 4, 1926). Rubber heel with exchangeable border. Wilhelm Langenfeld, Weissenburgstrasse 10a and Gustav Salm, Gneisenaustrasse 10, Köln-Nippes.

956,048 (June 25, 1926). Exchangeable rubber heel. Georg May, Eberstadt ü. Darmstadt.

956,067 (November 27, 1925). Intermediate tube for twin tires. Paul Piepenstock, Dickswall 81, Mulheim, Ruhr.

956,093 (June 12, 1926). Protective cover of rubber. Kurt Katzsch, Dittesstrasse 50, Plauen i. V.

956,173 (June 18, 1926). Hard rubber-body (gun-stock cover and the like), with tin plate pressed in. Rheinisch-Westfälische Sprengstoff A.-G., Cologne.

956,439 (June, 1926). Eye-syringe. Gebrüder Müller-Welt, Stuttgart.

956,797 (July 5, 1926). Tube-stethoscope. Konrad Stieglitz, Frankfurter strasse 87, Cassel.

956,843 (June 15, 1926). Rubber nipple of pure rubber in antiseptic envelope packing. Gustav Schwarzwald, Scheffelstrasse 19, Dresden.

956,879 (July 1, 1926). Roller massaging apparatus with prominent rubber suction cups. Dr. Max Greve, Rankestrasse 6, Berlin.

Prints

The United States

9,058 BOWMAN'S BATTERY SHOP. Tires and storage batteries. Carl W. Bowman, doing business as Bowman's Battery Shop, Abington, Massachusetts. Published July 17, 1926.

9,073 THE PATHFINDER MADE BY GOODYEAR A QUALITY TIRE AT A LOW PRICE. Tires. The Goodyear Tire & Rubber Co., Inc., Akron, Ohio. Published May 28, 1926.

9,074 THE GOOD-WINGFOOT-YEAR ALL-WEATHER THE WORLD'S STANDARD OF QUALITY. Tires. The Goodyear Tire & Rubber Co., Inc., Akron, Ohio. Published May 28, 1926.

Labels

The United States

30,634 HART'S MELODY—tires. Frank G. Hart, doing business as Hart Tire Co., Poughkeepsie, New York. Published April 10, 1926.

The Market for Rubber Scrap

New York

Domestic demand for rubber scrap during September was active and improved over that for August. The usual small amount of export business was done, but this continues to be an inconsiderable factor. Collections on all grades of rubber scrap are coming in from a fairly broad area. The prices on all qualities remain unchanged as listed a month ago except in the case of inner tubes on the entire list of which the prices have advanced a quarter of a cent a pound.

BOOTS AND SHOES. Prices are firm and steady for all grades. The consuming demand continues fair to good.

INNER TUBES. Stocks and collections are ample. The demand is increasing for both floating and compounding tubes and prices are advancing slowly.

TIRES. Heavy collections are in progress due to the large demand by the reclaiming industry. All qualities and grades of tires are firm and stronger in tone.

Quotations for Carload Lots

September 25, 1926

Boots and Shoes			
Boots and shoes, black	lb.	$0.02	@$0.02⅛
Red and white	lb.	.01	@ .01⅛
Trimmed arctics, black	lb.	.01	@ .01⅛
Untrimmed arctics	lb.	.00¾	@ .00⅞
Tennis shoes and soles	lb.	.01	@ .01¼
Hard Rubber			
No. 1 hard rubber	lb.	.13	@ .14
Battery jars, black compound	lb.	.01¾	@ .01⅞
Inner Tubes			
No. 1, floating	lb.	.09½	@ .09¾
No. 2, compounded	lb.	.07½	@ .07¾
Red	lb.	.06¾	@ .07
Mixed tubes	lb.	.06½	@ .06¾
Mechanicals			
Mixed black scrap	lb.	.01	@ .01⅛
Heels	lb.	.00⅞	@ .01
Hose, air-brake	ton	28.00	@32.00
regular	ton	23.00	@
No. 1 red	lb.	.02¼	@ .02½
No. 2 red	lb.	.01¾	@ .02
Red packing	lb.	.01¼	@ .01⅜
White, druggists' sundries	lb.	.03½	@ .04
Mechanical	lb.	.01½	@ .01¾
Tires			
Pneumatic Standard—			
Mixed auto tires with beads	ton	25.00	@26.00
Beadless	ton	33.00	@34.00
White auto tires with beads	ton	43.00	@44.00
Beadless	ton	57.00	@58.00
Mixed auto peelings	ton	38.00	@40.00
Solid—			
Mixed motor truck, clean	ton	40.00	@42.00

The following scrap rubber dealers are listed in our Buyers' Directory. For complete information see Index of Advertisers on Page 110.

Birkenstein, S., & Sons, Chicago, Illinois.
Chalfin, Joseph, & Co., Inc., New York, N. Y.
Cummings, Wm. H., & Sons, New York, N. Y.
Muehlstein, H., & Co., Inc., New York, N. Y.
Norton, M., & Co., Medford, Massachusetts.
Schnurmann, J., London, England.
Weber, Hermann, Hoboken, New Jersey.

Reclaimed Rubber

New York

Manufacturers of reclaimed rubber are back ordered and all reclaiming plants are operating at full capacity. The fuller realization of the value of reclaim as a plasticator, and its advantage in displacing crude in scientific compounding practice, places this material in a strong technical position which has been further upheld by the continued firmness of crude rubber. The demand centers largely on high tensile reclaims, inner tube stocks, standard tire reclaim, and white reclaim. The latter grade finds extensive use in making floor tiling of various colors. Continuous heavy volume of business seems assured for the remainder of the year. No change has been made in the prices of reclaim from those ruling one month ago, and all prices are firm.

New York Quotations

September 25, 1926

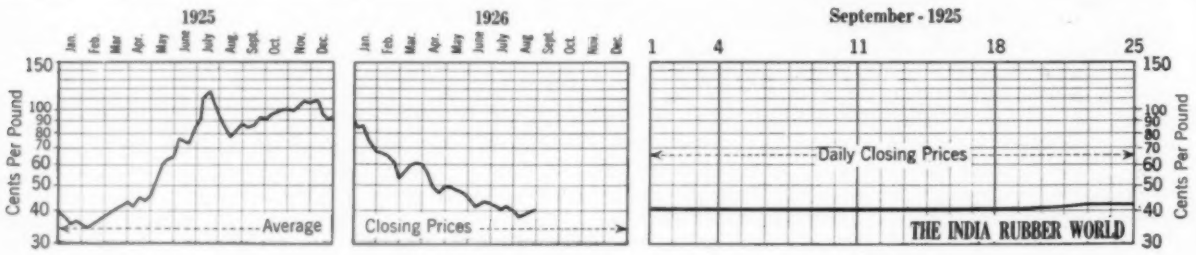
Auto Tire	Specific Gravity	Price Per Pound
Black	1.21	$0.09¼ @ $0.10
Black, washed	1.18	.11 @ .11¼
Black selected tires	1.20	.10¾ @ .11
Dark gray	1.35	.12 @ .14
Light gray	1.38	.15 @ .16
White	1.40	.17½ @ .18½
High Tensile Black		
Super-reclaim, No. 1	1.20	.20 @ .22
No. 2	1.20	.17 @ .18
Shoe		
Unwashed	1.60	.08¾ @ .09
Washed	1.50	.11¾ @ .12¼
Tube		
No. 1	1.00	.19 @ .21
No. 2	1.18	.16 @ .17
Miscellaneous		
High grade, red	1.35	.17½ @ .18½
Truck tire, heavy gravity	1.55	.05 @ .05½
Truck tire, light gravity	1.40	.09¾ @ .10¼
Mechanical blends	1.60	.08 @ .09

FLEXITE

Flexite, a new reclaim of moderate cost, shows the following analysis and physical tests: Acetone extract 9.5 per cent; mineral contents 52.00 per cent; sulphur 3.25 per cent; rubber 36.25 per cent; specific gravity 1.68; elongation at break 800 per cent; tensile strength, 900 pounds. This stock was primarily developed for boots and shoes, insulated wire and carriage cloth.

The following reclaimed rubber dealers are listed in our Buyers' Directory. For complete information see Index of Advertisers on Page 110.

Appleton Rubber Co., Franklin, Massachusetts.
Bloomingdale Rubber Co., New York, N. Y.
Clapp, E. H., Rubber Co., Boston, Massachusetts.
Defiance Rubber Co., Defiance, Ohio.
Manhattan Rubber Manufacturing Co., Passaic, New Jersey.
Nearpara Rubber Co., Trenton, New Jersey.
New Jersey Rubber Co., Lambertville, New Jersey.
Pequanoc Rubber Co., Butler, New Jersey.
Philadelphia Rubber Works, Philadelphia, Pennsylvania.
Rubber Regenerating Co., Naugatuck, Connecticut.
Somerset Rubber Reclaiming Works, New Brunswick, New Jersey.
U. S. Rubber Reclaiming Co., Inc., New York, N. Y.
Vulcan Recovery Co., Trenton, New Jersey.
Xylos Rubber Co., Akron, Ohio.



Ratio Graph of New York Closing Prices of Spot Ribbed Smoked Sheets

Review of the Crude Rubber Market

New York Open Market

THE September rubber market maintained a higher average price level than that of August. In the latter half of that month the 40 cent level was reached and was only fractionally exceeded in the first 4 weeks of September. From the 1st to the 18th of September the market was exceptionally dull and quiet with the spot closing price virtually constant at 40¼ cents for the entire three weeks' period. This monotony was somewhat relieved early the following week by a brief rally carrying the price on September 20 to 41 cents, 42½ cents September 23, 24 and 25.

Factories are willing to pay 42½ cents for spot and nearby futures to fill in requirements but will go no higher for October-December or January-March. In fact they display no interest in futures at 43 and 44 cents and no rubber of consequence has yet been sold for 1927 consumption to the general run of factories. The larger companies are steadily in the eastern markets and are securing stocks at the present favorable prices in anticipation of an advance.

The week ended August 28 was a dull one in the open market. Fluctuations were slight, not exceeding a quarter of a cent. There was but little factory demand and that only for nearby delivery. Futures were practically untouched.

The week of September 4 was equally quiet. Up to Thursday there was a little buying by factories. The interest of buyers and sellers alike relaxed at that time and centered in the approaching Labor Day holiday.

During the week of September 11 quiet and steady conditions continued to prevail. Factories were practically out of the market although the larger ones were seeking supplies in the primary eastern markets. Offers from the Far East ran higher in price than those of the New York market.

The week of September 18 showed gradually a firmer tone as spot advanced to 40½ cents at the close. Actual business, however, was quiet. Several large factories covered their nearby requirements.

There was a gradual tightening of prices during the week of September 25, London advancing ⅛*d* daily. This stiffening was attributed to reports that carryover certificates representing 20,000 tons would be cancelled.

Importations of all grades in August were 25,969 tons, compared with 31,584 tons one year ago. Plantation arrivals for August were 24,431 tons, compared with 29,921 tons one year ago. Total importations of plantation rubber for eight months ended August 31, 1926, were 254,945 tons compared with 231,467 tons for the corresponding period of 1925. Total importations of all grades of rubber for the eight months ended August 31 were 271,639 tons compared with 247,289 tons for the corresponding period of 1925. Arrivals September 1 to 25 were 29,112 tons.

Arrivals for the full month of September are estimated at 35,200 tons compared with 27,575 tons for August.

RUBBER AFLOAT TO THE UNITED STATES
(Figures in long tons)

Week Ended	British Malaya	Ceylon	East Indies	London	Total
August 28	5,144	770	1,305	508	7,727
September 4	5,035	757	1,285	409	7,486
September 11	5,896	821	1,548	356	8,621
September 18	4,524	782	876	310	6,492
September 25	5,332	1,236	2,174	187	8,929

Gross exports of crude rubber from Mayala in August totaled 34,625 long tons and gross imports into Malaya, including wet rubber, 34,625 long tons. Dealers stocks in Singapore and Penang July 31 amounted to 23,000 long tons.

New York Quotations

Following are the New York spot and future rubber quotations for one year ago, one month ago, and September 25, the current date:

Plantation Hevea	Sept. 25, 1925			Aug. 25, 1926		Sept. 25, 1926	
Rubber latex (Hevea)...*gal.*	$3.00	@		$1.80	@	$1.75	@
CREPE							
First latex, spot	.88	@	.89	.40½	@.41¼	.42¼	@.42½
Aug.-Sept.	.87	@	.88	.40¼	@.40½	.42¾	@.42½
Oct.-Dec.	.78	@	.79	.40¾	@.41½	.43	@
Jan.-Mar.	.69	@	.70	.41¾	@.42½	.43½	@.44
Apr.-June	.65	@	.68	.43	@.43½	.44	@.45
Off latex, spot	.87	@	.88	.40	@.40¾	.41½	@.41¾
Amber No. 2, spot	.75	@	.76	.39	@.39¼	.41	@
Aug.-Sept.	.74	@	.75	.37½	@.38½	.41	@
Oct.-Dec.	.61	@	.62	.38	@.38¾	.41	@
Jan.-Mar.	.60	@	.61	.40½	@.40¾	.41½	@
Apr.-June	.58	@	.59		@	.41½	@
Amber No. 3, spot	.74	@	.75	.38½	@.39	.40	@.40½
Brown, thin, clean	.73	@	.74	.37½	@.38½	.39¾	@.40¼
Brown, specky	.70	@	.71	.37	@.37½	.39½	@.40
Brown, roll	.54	@	.55	.35	@.35½	.36½	@.37
Sole crêpe	1.00	@		.60	@	.70	@
SHEET							
Ribbed, smoked spot	.88	@	.89	.40	@.40¼	.42	@.42¼
Aug.-Sept.	.87	@	.88	.40	@.40¼	.43	@
Oct.-Dec.	.78	@	.79	.40½	@.40¾	.42½	@.43
Jan.-Mar.	.69	@	.70	.41½	@.42	.43½	@.44
Apr.-June	.65	@	.66	.42¼	@.43½	.44	@.44½
East Indian							
PONTIANAK							
Banjermassin	.14	@		.16¼	@	.17¾	@
Pressed block	.22	@		.27½	@.28½	.27¾	@
Sarawak	.14	@		.16¼	@	.17½	@
South American							
PARAS							
Upriver, fine	.73	@		.40	@	.38	@
Unriver, fine	*.94	@		*.54	@	*.54	@
Upriver, medium	.68	@			@	.34	@
Upriver, coarse	.47	@		.25½	@	.29	@
Upriver, coarse	*.72	@		*.39	@	*.42	@
Islands, fine	.63	@		.36	@	.34	@
Islands, fine	*.91½	@		*.50	@	*.52	@
Cameta	.37	@	.38	†.25	@	†.25	@
Acre, Bolivian, fine	.73½	@		.41	@	.39	@
Acre, Bolivian, fine	*.95	@		*.54	@	*.54	@
Beni Bolivian	.73½	@		.41	@	.39½	@
Madeira, fine	.73½	@		.41	@	.39	@
Peruvian, fine	.70	@		.39	@	.38	@
Tapajos, fine	.68	@		.38	@	.37	@

*Washed and dried crêpe. Shipment from Brazil.
†Nominal.

New York Spot Closing Rubber Prices—Cents Per Pound

PLANTATIONS	August, 1926 23	24	25	26	27	28	30	31	September, 1926 1	2	3	4*	6†	7	8	9	10	11	13	14	15	16	17	18
Sheet																								
Ribbed smoked	40	40	39¾	39¾	40	40¼	41	40¾	40½	40¼	40¼	....	....	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40¼	40½	40½
Crêpe																								
First latex	40	40	40	39¾	40	40½	41	40¾	40½	40½	40½	....	....	40½	40½	40½	40¼	40¼	40½	40¼	40¼	40½	41	41
No. 2 blanket	38	38	38	38	38¼	38½	39	38¾	38¾	38¼	38¼	....	....	38¼	38¼	38¾	38¾	38¾	38¾	38¾	38¾	38¾	39	39
No. 3 blanket	37¾	37¾	37¾	37½	37¾	38	38¾	38¼	38¼	38¼	37¾	37¼	....	....	38¼	38¼	38¼	38¼	38¼	38¼	38¼	38¼	38¼	38¼
No. 4 blanket	36¾	36¾	36¾	36½	36½	37	37½	37½	37½	36¾	37	....	....	37¾	37¾	37½	37¾	37¾	38	38	38	37½	37½	37½
Thin clean brown	37¾	37¾	37½	37½	37¾	38¼	38¾	38¼	38	37¾	37¼	....	....	38¼	38¼	38¼	38¼	38¼	38½	38¼	38¼	38	38¾	38¾
Rolled brown	35½	35	34¾	34¾	35¼	35½	36	35¾	35¾	35¾	35¼	....	....	35¾	35¾	36	35½	35¾	35¾	35¼	35¼	35¼	35½	35½
Off latex	39½	39¼	39¼	39	39½	39¾	40¼	40	39¾	39¾	39¾	....	....	39¾	39¾	39¾	39¾	39¾	39¾	39¾	39¾	40	40¼	40¼

*No market.
†Holiday.

South American

CAUCHO	Sept. 25, 1925		Aug. 25, 1926		Sept. 25, 1926	
Upper Caucho ball	.48	@	.26	@		@
Upper Caucho ball	*.72	@	*.39	@	*	@
Lower Caucho ball	.45	@	.25	@		@
Maniçobas						
Ceará negro heads		@	†.35	@	†.35	@
Ceará scrap		@	†.18	@	†.18	@
Maniçoba 30% guar		@	†.34	@	†.34	@
Mangabeira, thin sheet		@	†.38	@	†.38	@
Centrals						
Central scrap		@	.25	@	.28	@
Central wet sheet		@	.20	@	.22	@
Corinto scrap		@	.25	@	.28	@
Esmeralda sausage		@	.25	@	.28	@
Guayule						
Duro, washed and dried	.45	@	.32	@	.32½	@
Leon, washed and dried		@	.30	@	.30½	@
Gutta Percha						
Gutta Siak	.22	@	.32¾	@	.33	@
Gutta Soh	.30	@	.30	@	.30¼	@
Red Macassar	3.00	@	3.00	@	2.80	@
Balata						
Block, Ciudad Bolivar	.64	@	.55	@	.48	@ .50
Colombia		@	.50	@	.42	@
Panama		@	.50	@	.42	@
Surinam, sheet	.75	@	.75	@	.76	@
amber		@	.80	@	.81	@
Chicle						
Honduras	‡.58	@ .68	‡.65	@	‡.65	@
Yucatan, fine	‡.58	@ .68	‡.65	@	‡.65	@

*Washed and dried crêpe. Shipment from Brazil.
†Nominal. ‡Duty paid.

New York Spot Closing Rubber Prices—Cents, Per Pound

PLANTATIONS	September, 1926 20	21	22	23	24	25
Sheet						
Ribbed smoked	41	41½	41¾	42¼	42	42¼
Crêpe						
First latex	41½	42	42	42½	42	42¼
No. 2 blanket	39¾	40	39¾	41¼	40	40¼
No. 3 blanket	39¼	39½	39¼	40¼	39½	39½
No. 4 blanket	37¼	38	38½	39¾	38½	38¾
Thin clean brown	39¼	39½	39¼	40½	39¼	39½
Rolled brown	36	36½	36¾	37¾	36½	36½
Off latex	40¾	41½	41½	42	41¾	41¾

Comparative Low and High New York Spot Rubber Prices

PLANTATIONS	September 1926*	1925	1924
First latex crêpe	$0.40¼ @ $0.42¼	$0.80 @ $0.96	$0.27 @ $0.28⅜
Smoked sheet, ribbed	.40 @ .42¼	.79 @ .95	.26¼ @ .28
PARAS			
Upriver, fine	.39 @ .40	.68 @ .75	.27 @ .30
Upriver, coarse	.26½ @ .27	.45 @ .49½	.16¼ @ .17½
Islands, fine	.34 @ .37½	.60 @ .68	.22 @ .23
Cametá		.36 @ .40	.14¾ @ .16

*Figured to September 25, 1926.

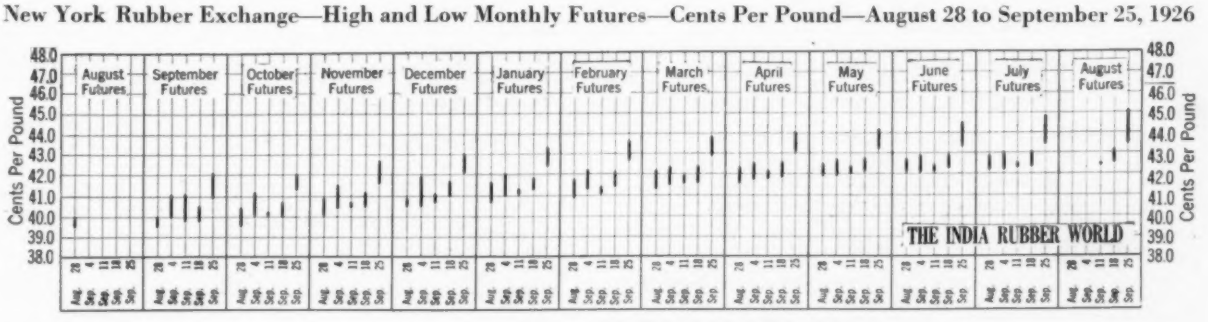
The Rubber Exchange of New York, Inc.

Daily Market Futures—Ribbed Smoked Sheets—Closing Prices—Cents Per Pound

1926	August 23	24	25	26	27	28	30	31	September 1	2	3	†4	*6	7	8	9	10	11	13	14	15	16	17	18	20	21	22	23	24	25
Aug.	39.9	40.0	39.8	39.6	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Sept.	39.8	39.8	39.6	39.6	39.8	40.0	41.1	40.6	40.3	40.0	40.2	....	....	41.1	40.0	40.0	40.0	39.8	40.0	39.8	39.8	39.8	40.4	40.5	40.9	40.9	41.7	42.1	42.0	41.7
Oct.	40.1	40.1	39.9	39.9	40.2	40.4	41.2	40.5	40.4	40.1	40.2	....	....	40.2	40.2	40.3	40.2	40.1	40.2	40.1	40.0	40.3	40.5	40.7	41.2	41.3	41.6	42.0	41.7	42.2
Nov.	40.5	40.5	40.1	40.0	40.6	40.9	41.5	41.0	40.8	40.5	40.4	....	....	40.7	40.7	40.7	40.6	40.5	40.5	40.6	40.5	40.8	41.1	41.2	41.6	41.7	42.3	42.7	42.2	42.8
Dec.	40.9	40.8	40.6	40.5	40.8	41.3	41.9	41.3	41.2	40.5	40.7	....	....	41.0	41.0	40.9	40.9	40.7	40.0	41.1	41.0	41.2	41.6	41.7	42.1	42.2	42.7	43.0	42.8	43.0
1927																														
Jan.	41.2	41.0	40.7	40.7	41.2	41.6	42.0	41.2	41.5	41.0	41.2	....	....	41.3	41.3	41.2	41.2	41.1	41.3	41.3	41.2	41.5	41.7	41.8	42.4	42.5	42.9	43.3	43.0	43.2
Feb.	41.4	41.3	41.0	40.9	41.5	41.7	42.2	41.3	41.6	41.3	41.4	....	....	41.4	41.4	41.2	41.2	41.1	41.4	41.5	41.5	41.7	42.0	42.1	42.7	42.7	43.2	43.6	43.2	43.4
Mar.	41.9	41.8	41.5	41.3	41.8	42.1	42.3	41.5	41.7	41.8	41.7	....	....	41.9	41.7	41.6	41.6	41.6	41.6	41.6	41.6	41.9	42.3	42.4	42.9	43.0	43.4	43.8	43.4	43.6
Apr.	42.1	42.0	41.8	41.6	42.1	42.3	42.5	41.7	41.9	42.0	41.9	....	....	42.1	41.9	41.9	41.9	41.7	41.9	41.8	41.8	42.1	42.5	42.6	43.1	43.2	43.5	44.0	43.6	43.7
May.	42.4	42.3	42.1	41.9	42.3	42.5	42.7	41.9	42.0	42.2	42.1	....	....	42.3	42.1	42.1	42.1	42.0	42.1	42.1	42.1	42.3	42.7	42.8	43.2	43.3	43.6	44.1	43.7	44.0
June	42.6	42.5	42.3	42.1	42.5	42.7	42.9	42.1	42.2	42.3	42.2	....	....	42.4	42.2	42.2	42.2	42.1	42.3	42.3	42.3	42.4	42.8	42.9	43.3	43.4	43.7	44.5	44.0	44.2
July.	42.9	42.8	42.3	42.2	42.6	42.8	43.0	42.2	42.4	42.4	42.3	....	....	42.5	42.4	42.4	42.4	42.3	42.4	42.4	42.4	42.5	42.9	43.0	43.4	43.5	43.8	44.8	44.2	44.5
Aug.	....	....	....	....	....	....	....	....	....	....	....	....	....	42.5	42.5	42.5	42.4	42.5	42.5	42.5	42.5	42.6	43.0	43.1	43.5	43.6	43.9	45.1	44.5	42.0

* Holiday.
† No market

New York Rubber Exchange—High and Low Monthly Futures—Cents Per Pound—August 28 to September 25, 1926



Rubber Exchange of New York, Inc.

Trading on the rubber exchange from August 25 to September 25 inclusive resulted in the sale of 3,346 contracts equivalent to 8,364 long tons, as compared with 4,443 contracts and 11,107.5 long tons the previous month.

About September 25 the average London price for spot rubber since August 1 was about 19.6*d*. In order to average about 21*d*. for the current quarter it is necessary that the price for October be maintained at 22½*d*. It is thus possible to obviate the 20 per cent reduction now apparently impending for next quarter by a sustained sharp advance in spot during October. Following such a reduction of the exportable allowance, sagging of the spot price would be in order for six to eight weeks during which time strong interests would secure fair quantities in the far eastern market and average down the advance paid in October. This is one of the topics of speculation in local market circles and may or may not have importance.

The market for the week August 23-28 was characterized by lack of activity, small price fluctuations and generally waiting attitude. Heavy arrivals and the increase of stocks in London and the United States and no active consuming demand emphasized the inclination to dullness regardless of the fact that rubber was purchasable at attractive prices in both spot and future positions. The high and low prices for the week practically coincided. The movement in all positions was either nothing or slightly fractional.

During the week August 30-September 4 transactions on the exchange ruled few and small, much as in the preceding week. The approaching Labor Day holidays exceeded interest in the slow market. Arrivals in August did not measure up to expectations. They were 27,575 tons compared with 34,000 tons estimated consumption. The high prices for all positions for the week were in general about one cent above those of the week previous. Differences between the highs and lows were also greater, ranging from 1.20 to 1.70 cents on 1926 futures to 0.8 to 0.9 cents on those of 1927.

The week September 6-11, the market prices ranged intermediate between those of the two preceding weeks. Trading was of minor proportions, aggregating only 64 contracts equivalent to 140 long tons for the week. Speculative and consuming interests were both continuously absent. Under these conditions prices were nominal and differences of high and low prices fractional and of little significance.

The market of September 13-18 exhibited more interest and greater activity on the rubber exchange with some advance in prices. Crude rubber stock conditions and the tire manufacturing and sales situation supplied the basis for strong market resistance to lower prices for crude rubber. The rise in prices that featured the week was stimulated by rumors from London stating that the unused export coupons of last quarter will probably be cancelled at the next meeting of the Stevenson committee.

High and low prices for the week ended September 25 exhibited a moderate rise, and somewhat wider differences in all positions than the corresponding prices of the week before.

London

The market for September was generally inactive with price levels ranging by small variations between 19¾*d* and 21⅛*d*. Most of the time spot level was 20*d*. The upward price movements were based chiefly on official reports of American current consumption in the tire division and on dealer and speculative support. In general dealers were awaiting resumption of American consuming demand.

The week ended August 28, the market opened very quiet at 20*d*. Increased dullness with declining prices further developed as the week progressed. The week closed, however, with regain of the price to 20*d* and a fair amount of business done.

The week of September 4 began with one day of good business at 21⅛*d*. The remainder of the week the price stood at 20*d* and the market was very quiet.

The week of September 11 began and ended with the price at 20*d*. In the interval between, the market was inactive at 19⅞*d* with very few buyers interested. The average price for the current quarter was 19.545*d* on September 11.

The market week of September 18 brought a slight rally based on the report of American consumption, the week closing with all positions firm and active. Spot ribs closed the week at 20⅛*d*.

The first four days of the week of September 25, dealer and speculator support brought advancing values. On September 23 spot was 21⅛*d*, firm and active.

London stocks on September 25 were 4,909 tons more than on August 21, an average weekly gain of 818 tons for 6 weeks. The weekly record was as follows: August 30, 30,159 tons; September 6, 30,764 tons; September 13, 32,011 tons; September 20, 32,249 tons; September 27, 34,587 tons.

Singapore

The Singapore market followed closely the course of the London and New York markets. Between August 23 when spot was 18⅞*d* and September 23 when it was 20⅛*d* the gain was 1¼*d*. Most of the advance was realized after August 16. In general the market for the month was quiet and failed to respond fully to the advance in the western markets occasioned by rumors of coupon cancellation.

CHROMIUM PLATED TIRE MOLDS

The expense and difficulty in keeping rubber molds clean are important matters in all rubber factories producing quality molded goods. This is particularly so in the case of tire molds which are always much lettered. A solution of the problems is indicated by the results of trials by one of the leading American tire companies of molds experimentally plated with chromium. The plating was done under a handicap since the equipment was not complete for the purpose. It is interesting to note the service record of a 30 by 5.25 balloon tire chromium plated mold. It was placed in production December 7, 1925, and up to August 21, 1926, had made 1917 heats requiring in the interval only 4 cleanings. Other chromium plated molds of the same type gave records of 567, 659, and 883 heats before the first cleaning.

The Market for Chemicals and Compounding Ingredients

New York

THE demand for compounding ingredients in all branches of the rubber industry continues very active. No seasonal falling off is apparently impending. The heavy increase in the consumption of reclaims is the chief factor of notable influence tending to lessen the demand for tonnage compounding ingredients. This affects, however, mostly such ingredients as whiting and clay. A small advance in pig lead was made but it was not sufficient to affect the price of litharge.

ACCELERATORS. So many excellent new accelerators have become available within the current year that compounders in general have not confined themselves to any kind as standard. In tires the cure of the component stocks is generally balanced by a suitable selection of accelerators, used with respect to their speed of curing and effect on tensile properties. Aniline and Thio, the earlier popular accelerators, are now very generally discarded and employed as materials for the manufacture of much better accelerators.

ANTI-OXIDANTS. These are being tested out in a practical way in all lines of the industry and will ultimately be in constant demand. There will then be three indispensable compounding requisites relating to the cure of goods, namely: sulphur, accelerators and anti-oxidants.

BENZOL. This solvent shows steady market activity and great firmness in price.

CARBON BLACK. This indispensable reinforcing ingredient is in steady active movement for all branches of rubber manufacturing and especially so for tires, shoes and mechanicals. It is reported that the allowance of gas for carbon gas making has been reduced by 31,000,000 cubic feet per day, effective until March 1, 1927, in the Ouachita Parish gas field in Louisana. Thus far this restriction has not caused an increase in price which remains firm and unchanged.

CLAY. The demand continues steady and in good volume. This year's consumption compared with that of last year will be somewhat less, due to the increased use of reclaim.

LITHARGE. Stocks have been in steady movement and prices unchanged.

LITHOPONE. White goods, particularly white and light colored tiling, supply a steady demand for lithopone, the price of which holds firm.

MINERAL RUBBER. Domestic and export demand calls steadily for increasingly greater output on the part of producers. Prices remain firm.

SOLVENT NAPHTHA. The summer demand for this popular solvent was well maintained by the proofing trade. The price remains unchanged with heavy production sold ahead.

ZINC OXIDE. Both pure and leaded grades are favored in the rubber industry, each for its special adaptations. Prices are steady and unchanged.

New York Quotations

September 25, 1926

Accelerators, Inorganic

Lead, carbonate	lb.	$0.10¾	@
Lead, red	lb.	.12	@
sublimed blue	lb.	.10	@
sublimed white	lb.	.10	@
Lime, R. M. hydrated	ton	15.00	@
Litharge	lb.	.11½	@
Magnesia calcined, light, (bbls.)	lb.	.15	@
calcined, md. light (bbls.)	lb.	.06	@
calcined, extra light (bbls.)	lb.	.50	@
calcined, heavy (bbls.)	lb.	.04½	@
magnesium, carb., light (bags)	lb.		@
Orange mineral A.A.A	lb.	.14¼	@
Rubber lead No. 4	lb		@

Accelerators, Organic

A1	lb.	.26 @	.30
A 5-10	lb.	.35 @	.40
A-7	lb.	.65 @	.85
A 10	lb.	.50 @	.65
A-11	lb.	.70 @	.90
A-19	lb.	.70 @	.90
A-40	lb.	.65 @	.85
Z-88	lb.	.75 @	1.00
Aldehyde ammonia	lb.	.82 @	
Aniline (drums)	lb.	.16½ @	.17
B. B	lb.	1.05 @	1.07
Captax	lb.	1.20 @	1.50
D. P. G. salt	lb.	.76 @	
Di-ortho-tolylguanidine	lb.	1.08 @	
Diphenyl guanidine	lb.	.88 @	
Ethylidine aniline	lb.	.65 @	
Excellerex	lb.	.45 @	
Formaldehyde aniline	lb.	.42 @	
Furac 1, 2 and 3	lb.	@	
Grasselerator 102	lb.	.80 @	.85
552	lb.	4.80 @	5.00
808	lb.	1.25 @	1.50
Heptene	lb.	.55 @	
Hexamethylene tetramine	lb.	.80 @	.85
Hydrofuramide	lb.	@	
Methylene aniline	lb.	@	
Methylene dianiline	lb.	@	
Monex	lb.	3.25 @	
No. 999 lead oleate	lb.	.17 @	.18
Piperidine Penta-Dithio-Carb.	lb.	5.00 @	
R. & H. 50 (100 lb. drums)		.60 @	
Super-sulphur, No. 1	lb.	.50 @	
No. 2	lb.	.18 @	.25
Tensilac No. 39	lb.	.65 @	
No. 41	lb.	.65 @	
Thiocarbanilid	lb.	.22 @	.28
Trimene	lb.	.75 @	
base	lb.	1.20 @	
Triphenylguanidine	lb.	.73 @	
Tuads	lb.	3.25 @	
Vulcone	lb.	@	
Zimate	lb.	4.00 @	

Acids

Acetic 28% (bbls.)	100 lb.	$3.50 @	
glacial (carboys)	100 lb.	12.21 @	
Oleic	lb.	.09¾ @	.10¼
Stearic	lb.	@	
Sulphuric, 66° (carboys)	100 lb.	1.60 @	

Alkalies

Caustic soda	lb.	.04½ @	
Sulphite soda	100 lbs.	3.50 @	

Anti-Oxidants

Age-Rite	lb.	.85 @	.90
Antox	lb.	@	
V. G. B	lb.	.66 @	.

Colors

BLACK

Bone	lb.	.05½ @	.11
Carbon (see Comp. Ing.)			
A. & W. nonfil No. 1	lb.	.40 @	
No. 2	lb.	.25 @	
Drop	lb.	.07½ @	.15
Lampblack	lb.	.10 @	.40

BLUE

A. & W. blue	lb.	1.25 @	5.00
Du Pont, N.	100 lbs.	@	
Marine, A. C.	100 lbs.	@	
Prussian	lb.	.34 @	.35
Ultramarine	lb.	.09 @	.35

BROWN

Sienna, Italian	lb.	.07 @	.08½
Umber, Turkey	lb.	.05½ @	.06½

GREEN

A. & W. green	lb.	1.25 @	3.00
Chrome, light	lb.	.29 @	
medium	lb.	.30 @	
dark	lb.	.32 @	
Du Pont, G. L.	100 lbs.	@	
Y. L.	100 lbs.	@	
Oxide of chromium	lb.	.38 @	

ORANGE

Du Pont R. O.	100 lbs.	@	
R. X.	100 lbs.	@	
Y. O.	100 lbs.	@	
Y. X.	100 lbs.	@	

RED

A. & W. red	lb.	.75 @	3.50
purple	lb.	2.00 @	4.00
Antimony, golden, No. 1	lb.	.16 @	
No. 2	lb.	@	
golden 15/17%	lb.	@	

Colors—*(Continued)*

RED—*(Continued)*

Antimony, crimson, F.	lb.	@	
crimson, R.M.P. No. 3	lb.	@	
7-A	lb	@	
Z-2	lb	@	
Sulphuret vermilion	lb.	$0.37½	@
Du Pont R. I.	100 lbs.	@	
R. S.	100 lbs.	@	
Brilliant A. C.	100 lbs.	@	
Iron Oxides			
bright red pure domestic	lb.	.12 @	
bright red pure English	lb.	.14 @	.15
bright red reduced English	lb.	.10 @	.12
bright red reduced domestic	lb.	.10 @	
Indian (maroon), red pure domestic	lb.	.11 @	
Indian (maroon), red pure English	lb.	.11 @	.13
Indian (maroon), red reduced English	lb.	.08 @	.10
Indian (maroon), red reduced domestic	lb.	.08 @	
Oximony	lb.	.13¼ @	
Spanish red oxide	lb.	.04 @	
Venetian reds	lb.	.02½ @	.06
Vermilion, English quicksilver	lb.	1.55 @	1.65

WHITE

Albalith	lb.	@	
Lithopone	lb	@	
Azolith	lb.	.05½ @	.06½
Grasselli	lb.	.05½ @	.06½
Sterling	lb.	.05½ @	.06½
Zinc Oxide			
AAA (lead free)	lb.	.07¼ @	.07¾
Azo (factory):			
ZZZ (lead free)	lb.	.07¼ @	.07¾
ZZ (5% leaded)	lb.	.06¾ @	.07⅜
Z (8% leaded)	lb	.07⅛ @	.07¾
French Process			
Green seal	lb.	.11⅛ @	.11¾
Red seal	lb	.10⅛ @	.10¾
White seal	lb.	@	
Horse Head Brands			
Selected	lb.	@	
Special	lb.	@	
XX red	lb	@	

Colors—*(Continued)*

WHITE—*Continued*

Leaded Brands			
Lehigh	lb.	$0.07½ @	$0.07¾
Standard	lb.	.06¾ @	.07½
Sterling	lb.	.07½ @	.07¾
Superior	lb.	.07¾ @	.07¾
Palmerton Process			
Kadox, black	lb.	@	
blue	lb.	@	
red	lb.	@	

YELLOW

A. & W. yellow	lb.	2.00 @	4.00
Arsenic	lb.	.48 @	
Chrome	lb.	.17½ @	.18½
Du Pont N.	100 lbs.	@	
Grasselli cadmium	lb.	1.50 @	
Ochre, domestic	lb.	.02 @	.02½
imported	lb.	.03½ @	.04
Oxide, pure	lb.	.09 @	
Zinc, imp.	lb.	.24 @	

Compounding Ingredients

Aluminum flake (sacks c.l.)	ton	21.85 @	
(sacks l.c.l.)	ton	24.50 @	
Filler	ton	@	
Silicate	ton	25.00 @	28.00
Ammonia carbonate	lb.	.13½ @	.14½
Asbestine	ton	13.50 @	14.50
Barium, carbonate	ton	52.00 @	
dust	lb.	.05 @	.06
Barytes, imported	ton	30.00 @	
water ground and floated	ton	23.00 @	25.00
Basofor	lb.	.04½ @	
Blanc fixe, dry	ton	85.00 @	87.50
pulp	ton	60.00 @	62.50
Carbon Black			
Aerfloted arrow	lb.	.09 @	.13
Compressed	lb.	.08½ @	.12½
Uncompressed	lb.	.08 @	.12
Micronex	lb.	.09 @	.13
Carrara filler	lb.	.01½ @	
Catalpo (facty.)	lb.	.02 @	
Chalk	lb.	@	
Clay, blue ribbon (c. l. fcty.)	ton	@	
Blue Ridge, dark	ton	9.00 @	
light	ton	12.00 @	
China	lb.	.01¾ @	
Dixie	ton	20.00 @	
Langford	ton	12.00 @	
Perfection	ton	16.00 @	
Mineral Flour (Florida)	ton	20.00 @	23.00
Para	ton	@	
Suprex	ton	13.00 @	26.00
Tuscan	ton	12.00 @	
White floss	ton	17.00 @	
Cotton flock, black	lb.	.11 @	.12
light-colored	lb.	.11 @	.12
white	lb.	.12½ @	.30
Cotton linters clean mill run	lb.	@	
Fossil flour	lb.	.02½ @	
Glue, high grade	lb.	.19½ @	.29
medium	lb.	.18 @	.24
low grade	lb.	.15 @	.17
Infusorial earth	lb.	.02½ @	
Mica, amber (fact'y)	lb	.05 @	
Diamond	lb.	@	
Pumice stone, powd.	lb.	.02½ @	.04

New York Quotations

September 25, 1926

Compounding Ingredients—*(Continued)*

Rotten stone (bbls.)	lb.	$0.02½ @	$0.04½
Slate flour (fact'y c. l.)	ton	@	
Soap bark, cut	lb.	@	
Soapstone	ton	15.00 @	22.00
Sodium bicarb	100 lbs.	2.50 @	
Starch, pewd. corn			
Buffalo (bbls.)	100 lbs.	3.69 @	3.79
Buffalo (bags)	100 lbs.	3.42 @	3.52
Talc, domestic	ton	25.00 @	
French	ton	@	
Terra blanche	ton	22.00 @	25.00
Thermatomic carbon	lb.	.05 @	
Whiting:			
Commercial	100 lbs.	@	
English, cliffstone	100 lbs.	@	
Quaker	ton	13.00 @	
Sussex	ton	8.00 @	
Westminster Brand	100 lbs.	@	
Witco (c.l.) (fact'y)	ton	10.00 @	
Whiting, imp. chalk	100 lbs.	.90 @	1.00
Paris White, Eng. Cliffstone,	100 lbs.	1.50 @	2.50
Wood flour	ton	@	
Pulp, XXX (fact'y)	ton	35.00 @	
X (fact'y)	ton	25.00 @	

Mineral Rubber

Genasco (facty.)	ton	50.00 @	52.00
Gilsonite (fact'y)	ton	37.14 @	39.65
Granulated M. R.	ton	@	
Hydrocarbon, hard	ton	29.00 @	35.00
Hydrocarbon, soft	ton	29.00 @	35.00
Ohmlac Kapak, M-R	ton	@	
K-4	ton	@	
320/340 m. p. hydrocarbon	ton	47.00 @	52.00
300/310 m. p. hydrocarbon	ton	42.00 @	47.00
Paradura (fact'y)	ton	70.00 @	72.50
Pioneer, M. R., solid (fac.)	ton	@	
M. R. granulated	ton	@	
Robertson, M. R. solid (facty.)	ton	35.00 @	75.00
M. R. gran. (facty.)	ton	42.00 @	80.00

Oils (Softeners)

Castor, No. 1, U. S. P.	lb.	.12½ @	
No. 3, U. S. P.	lb.	.12 @	
Corn, crude (bbls.)	lb.	.11½ @	
Cotton, summer yellow	lb.	.11 @	
Cycline	gal	.27 @	.38
Fluxrite fluid	lb.	.05 @	.06
solid	lb.	.05 @	.06
Glycerine	lb.	.30 @	.32
Linseed, raw	lb.	.12 @	
Liquid flux	lb.	.10 @	.12
Moldrite	lb.	@	
Palm lagos	lb.	.09½ @	
niger	lb.	.09 @	
Peanut, crude	lb.	.12 @	
refined	lb.	.14 @	
Petrolatum, standard	lb.	.06 @	.08
sticky	lb.	.08 @	.10
Pine, steam distilled	gal.	.73 @	
Plastone	lb	@	
Rapeseed, refined	gal.	.86 @	
Rosin	gal.	.85 @	
Synthecite	lb.	.05 @	.06
Tackol	lb.	.09 @	.15
Tar	gal.	.45 @	
Virol	lb.	.09 @	.10

Resins and Pitches

Pitch, Burgundy	lb.	@	
Coal tar	bbl.	@	
Fluxol hardwood	lb.	$0.02 @	$0.04
Pine tar, retort	bbl.	20.00 @	
Ponto	lb.	@	
Rosin, K (bbl.)	280 lbs.	16.50 @	
strained (bbl.)	280 lbs.	14.00 @	
Shellac, fine orange	lb.	.70 @	
Tar, kiln	bbl.	19.00 @	

Solvents

Benzol (90%, 7.21 lbs. gal.) pure	gal.	.30 @	
Carbon bisulphide (10.81 lbs. gal.) 99.9% pure (drums)	lb.	.05½ @	.06¼
tetrachloride (13.28 lbs. gal.) 99.7% pure (drums)	lb.	.07 @	.08
Gasoline No. 303			
Tankcars	gal.	.21½ @	
Drums, c. l.	gal.	.24½ @	
Drums, l. c. l.	gal.	.27½ @	
Naphtha			
68° Bé., 112°, 324°	gal.	.20 @	
70° Bé., 114°, 314°	gal.	.20½ @	
71° Bé., 112°, 304°	gal.	.21 @	
Turpentine, spirits	gal.	.95 @	
wood, steam distilled	gal.	.92 @	

Substitutes

Black	lb.	.08½ @	.14
Brown	lb.	.09 @	.16
White	lb.	.09 @	.17

Vulcanizing Ingredients

Sulphur chloride	lb.	@	
refined velvet (c.l.)	100 lbs.	2.60 @	2.85
(l.c.l.)	100 lbs.	2.90 @	3.40
Soft rubber (c.l.)	100 lbs.	2.60 @	2.85
(l.c.l.)	100 lbs.	2.90 @	3.15
Superfine flour (c.l.)	100 lbs.	2.20 @	2.55
(l.c.l.)	100 lbs.	2.45 @	3.10
Tire brand, superfine	100 lbs.	@	
Tube brand, velvet	100 lbs.	@	

(See also Colors—Antimony)

Waxes

Wax, beeswax, white, com.	lb.	.55 @	
carnauba	lb.	.39 @	.60
ceresine white	lb.	.12 @	
montan	lb.	.07 @	.07½
ozokerite, black	lb.	.30 @	
green	lb.	.32 @	

Paraffin

122/124 white crude scale	lb.	.05⅛ @	
124/126 white crude scale	lb.	.05¼ @	
120/122 fully refined	lb.	.05⅜ @	
125/127 fully refined	lb.	.05½ @	

AMERICAN PRODUCTION OF CARBON BLACK

During 1925 the production in the United States of carbon black amounted to 177,417,378 pounds, according to the Bureau of Mines, from 63 plants operating in eight states. This output is said to represent a decrease of 9,454,656 pounds, or five per cent, from the total production reported in 1924, and also indicates the first decline in yearly production of carbon black since 1920. Deliveries to consumers were, however, higher than ever before, the figure for the year of 175,631,326 pounds being an increase over 1924 of 36 per cent. Prices on the other hand reached a new low level of 5.4 cents as the average per pound at the plants.

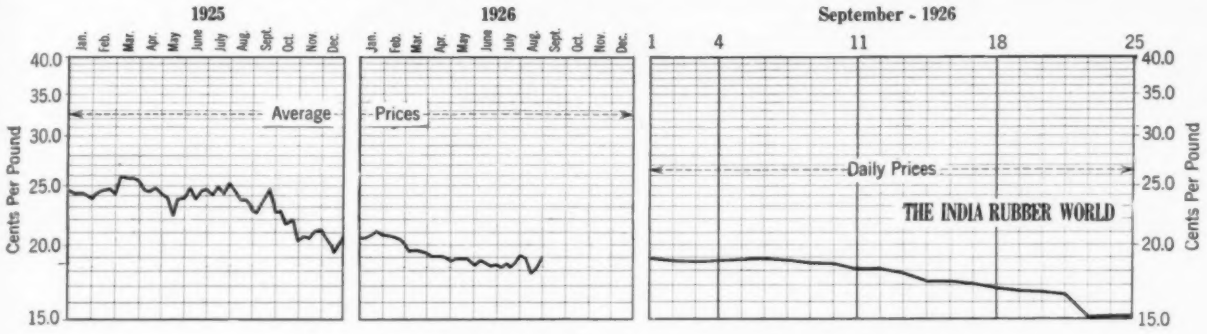
Louisiana has continued since 1921 to be the largest carbon black producing state, its output in 1925 of nearly 130,000,000 pounds comprising 73 per cent of the total for the country. Texas now ranks second, having displaced West Virginia in the volume of its production, the latter having, with Kentucky, reported declines for 1925 of 28 per cent. These declines are said to have resulted in the main from a decreased supply of natural gas, which at the same time became more valuable for other purposes.

PAHRAH RECLAIMS

Pahrah reclaims possess marked uniformity, cleanliness, high tensile properties and excellent aging qualities. They have proved very successful in competitive compounding by allowing maximum displacement of crude rubber, also for increasing the quality of compounds using little or no crude rubber.

RUBBER TEST MATS

The unique plan is being followed by the Roessler & Hasslacher Chemical Co., 709 Sixth avenue, New York, N. Y., of sending to chemists and compounders 5-inch cured molded rubber mats showing the practical value of their accelerators and compounding ingredients. The details of the formula of the stock are given on the face of the mat together with curing time and temperature. The mat is designed to be cut up for testing purposes. Similar mat samples will be sent out from time to time representing various R. & H. accelerators, etc., in different types of compound.



Ratio Graph of New York Daily Prices of Spot Middling Upland Cotton

The Market for Cotton and Other Fabrics

New York

AMERICAN COTTON. The September market for spot middling was a declining one throughout the month. The price September 1 was 18.90 cents to which point it reacted from the 16 cent level obtaining just previously to the appearance of the government bulletin estimating the growing crop, as of August 16, at 15,248,000 bales. Trading preceding Labor Day adjournment was confined to routine hedging operations and following the holiday became nervous over the outlook for an ultimate yield far above expectations.

Under these conditions the price on September 11 was 18.05 cents. As the week of September 18 ended the market level dropped below 17 cents as crop ideas soared higher. The government report of the crop condition as of September 1 estimated the yield at 15,166,000 was more favorable than was expected. These figures caused a break of about a half cent in prices. The heavy jolt, however, came with the report of 15,810,000 bales as the estimate for September 16. This showed an increase of 644,000 bales over the previous report and forced the price to 15.05 cents on September 23.

PIMA COTTON. Arizona Pimas are relatively firm possibly because this is now the only staple outside of Sea Islands and a few scattered South American cottons with 1⅝-inch staple, but the crop in the Salt River Valley can scarcely exceed 15,000 bales.

EGYPTIAN COTTON. The recent big advance of the price in Egypt has not been followed by the trade. It is reported that spinners are not willing to buy Sakel at present levels until after they receive some definite information as to the staple in this year's crop.

Uppers are also somewhat easier although there has been some demand for the better grades. It is believed that Uppers will offer more resistance on a declining market.

Cotton Fabrics

DUCKS, DRILLS AND OSNABURGS. The market for these goods is active, the demand is good and consumers' inventories are low. Business in this country is steadily gaining and many cotton mills are said to be booked with orders to the end of November.

RAINCOAT FABRICS. The raincoat fabric market continues very active. It is believed that all the rubberizers are sold up on production. Bombazine, plaids and surface prints continue the prevailing fabrics for raincoat purposes.

SHEETINGS. The market has dropped back into a waiting condition again after fair business during the past few weeks. Prices are holding firm notwithstanding the small volume of purchasing. Buying is inclined to slow up very materially each week that a government cotton crop condition report is forthcoming. This occurs bi-monthly during the growing season.

TIRE FABRIC. September business in tire fabrics was exceedingly active. Many large orders were placed for delivery, during the balance of the year. The situation has so greatly improved that most fabric mills are sold ahead, are operating all of their looms and finding it difficult to supply the rush demand. Spot and nearby deliveries are difficult to obtain. In the first 3 weeks of the month orders placed totaled 5,000,000 pounds, 1,000,000 of which were for one tire company. Some tire companies are constant users of off color cotton.

New York Quotations

September 25, 1926

Drills

38-inch 2.00-yard	yard	$0.17 @
40-inch 3.47-yard		.10⅛ @
52-inch 1.90-yard		.18⅜ @
60-inch 1.52-yard		.23⅛ @

Ducks

38-inch 2.00-yard	yard	.17 @
40-inch 1.47-yard		.23⅛ @
72-inch 16.66-ounce		.37⅜ @
72-inch 17.21-ounce		.39⅞ @
MECHANICAL		
Hose and belting	pound	.31½ @
Specials		.35½ @
TENNIS		
52-inch 1.35-yard	yard	.25⅛ @

Hollands

DEAD FINISH		
Standard, 36-inch	yard	.19½ @
42-inch		.23½ @
FLAT FINISH		
Imperial, 36-inch		.15½ @
40-inch		.17½ @
RED SEAL		
36-inch		.16 @
40-inch		.17 @
50-inch		.25 @
GOLD SEAL		
40-inch		.23 @

Osnaburgs

40-inch 2.35-yard	yard	$0.14⅛ @
40-inch 2.48-yard		.13⅜ @
40-inch 3.00-yard		.11⅜ @
37-inch 2.42-yard		.14⅜ @

Raincoat Fabrics

COTTON		
Bombazine 64 x 60	yard	.11¾ @
Bombazine 60 x 48		.10¾ @
Plaids 60 x 48		.11½ @
Plaids 48 x 48		.10½ @
Surface prints 60 x 48		.11¾ @
Surface prints 64 x 60		.13 @

Sheetings, 40-inch

48 x 48, 2.50-yard	yard	.12¾ @	.13
48 x 48, 2.85-yard		.11¾ @	.11½
64 x 68, 3.15-yard		.12¼ @	.12⅜
56 x 60, 3.60-yard		.10 @	.10¼
48 x 44 3.75-yard		.09½ @	.09¾

Sheetings, 36-inch

48 x 48, 5.00-yard	yard	.07½ @	.07¾
40 x 40, 6.15-yard		.06 @	

Tire Fabrics

SQUARE WOVEN 17¼-ounce		
Egyptian, karded	pound	$0.50 @ $0.52
Peeler, karded		.40 @ .42
CORD 23/5/3		
Egyptian, combed	pound	.56 @ .58
Egyptian, karded		.50 @ .53
Peeler karded, 1 1/32-in.		.42 @ .44
CORD 23/4/3		
Peeler, karded	pound	.43 @ .45
CORD 23/3/3		
Peeler, karded	pound	.41 @ .43
CORD 15/3/3		
Peeler, karded	pound	.38 @ .41
CORD 13/3/3		
Peeler, karded	pound	.37 @ .40
LENO BREAKER		
8-oz. Peeler, karded	pound	.41 @ .43
10-oz. Peeler, karded		.41 @ .44
CHAFER		
8.25-oz. Peeler, karded (2 ply)	pound	.38 @ .42
9.5-oz. Peeler, karded (4-ply)		.42 @ .45
12-oz. Peeler, karded		.42 @ .44
14-oz. Peeler, karded		.41 @ .44

The Cotton Outlook

New Cotton Crop Figures

COTTON conditions as of September 16 are stated by the Crop Reporting Board, Department of Agriculture, as warranting an estimate of 15,810,000 bales of 500 pounds gross weight, the new forecast being higher by 644,000 bales than that of September 1. The condition of the crop is considered 59.5 per cent of normal, compared with 53.8 per cent on September 16 of last year. The ginnings to date are given by the Bureau of the Census, Department of Commerce, as 2,511,317 bales.

The *Journal of Commerce* makes the following statement regarding the new estimate:

The report of the board came as a big surprise to observers. It had been confidently anticipated that the estimate would be much under that of September 1. Members of the board declined to comment on the situation beyond giving the usual resumé of cotton crop conditions throughout the belt.

It is indicated that advices from the cotton belt are very optimistic as to baleage and from this it might be assumed that the crop reporting board had to use extreme caution in considering the data furnished from the field.

The improvement in the condition of the crop is attributed chiefly to the unusually warm weather of the first half of the present month, which favored fruiting and enabled the crop partially to overcome its late start. Since the first of the month prospects have declined in only two important states, Missouri and Tennessee.

According to *The Textile World*:

The latest cotton crop report is somewhat higher than the average estimate of those engaged in the cotton business. These guesses were all under 15,000,000 and as a consequence the market sold off immediately upon the issuance of the report. What the ultimate effect will be and how it will influence spinners with relation to the operation of their plants remains to be seen. There are those who predict 20 cent cotton before very long, and although they contemplate lower prices when ginning reports are to hand, yet they feel there will be a period of comparative stabilization which will result in the continued operation of buyers.

World Consumption of Cotton Increases

World consumption of cotton for the season ended July, 1926, was 24,681,000 bales against 23,294,000 bales last season, according to cablegrams received by the United States Department of Agriculture from the International Spinners' Federation, Manchester, England. American cotton consumed totaled 13,730,000 bales, as compared with figures for the previous year of 13,256,000 bales. Total world stocks of American cotton on July 31 were 1,969,000 bales against 1,833,000 a year ago, while total stocks of all cottons were estimated at 4,498,000 bales, an increase of 200,000 bales over last year. Although world stocks of American cotton are larger than a year ago it is said that practically every European country has now slightly less stock than last year.

Cotton Possibilities of South America

A cotton-growing industry, rivaling that of the United States, may possibly develop in South America, according to Leon M. Estabrook, agricultural commissioner of the Bureau of Agricultural Economies. Having recently returned from an extensive tour through northern Argentina, Paraguay, and southern Brazil, Mr. Estabrook believes that the marvelous development that has taken place during the last half century in the United States will, to a considerable extent, be duplicated in the temperate regions of South America. Brazil, Uruguay, Paraguay and Argentina have climates, soils, and natural resources almost as varied as those of the United States, and Argentina's cotton-growing possibilities are especially significant. Mr. Estabrook estimates the total area adapted to cotton in certain sections of Argentina as totaling 157,457,153 acres, as against the 154,104,320 acres of six of the cotton-growing divisions of the United States or the 16,198,000 acres in Texas, which in 1924 were devoted to cotton raising.

California Cotton Reported in Excellent Condition

An average condition of 99 per cent was reported about August 1, 1926, for the cotton crop of California, 167,000 acres being under cultivation as compared with 172,000 acres harvested in 1925. The report stated that probably a better late June condition for the whole state crop had never before existed, the San Joaquin Valley showing an increase of about 17,000 acres, with an additional 135,000 acres for lower California and Mexico.

Range Estimates Discontinued

Press reports state that the so-called "range estimates," issued this season as a part of the semi-monthly forecasts of the Crop Reporting Board of the Department of Agriculture, were on September 22 ordered discontinued, as the result of a conference of Southern representatives. This Congressional delegation, headed by Representative Eugene Black, of Texas, asserted that, following the latest governmental report, the price of cotton declined $12.50 a bale, the range estimates being thus responsible for a break in the market.

Mexican Cotton Crop Damaged

Press reports of September 12 state that two million dollars' worth of cotton has been lost through floods in the Laguna region of Mexico. The cotton growers have requested the government to build dams to prevent the Nazas River from overflowing, and say that unless these dams are constructed the entire cotton region will continue to face the dangers of floods which will destroy the industry.

Unfavorable Outlook for Egyptian Cotton Industry?

Notwithstanding the great increases during September in the price of Egyptian cotton, and the recent advance in July exports, the rapid fall in the world price of cotton has resulted, according to *Commerce Reports*, in a decline in value to the Egyptian industry of $41,000,000, or about 31 per cent for the first six months of 1926. Although Egyptian raw cotton exports during the six

months period gained from 15 to 20 per cent in quantity, the decline in price has seriously affected the country's trade balance, as cotton normally constitutes 90 per cent of the total exports. A cotton conference will be held by the International Cotton Federation next January in Alexandria, Egypt, for the purpose of considering the decline in the quality of Sakel and other Egyptian cotton, and the effect of State purchase of Egyptian cotton in the world markets.

REPORT OF RIMS INSPECTED AND APPROVED BY THE TIRE AND RIM ASSOCIATION OF AMERICA, INC.

Rim Size	August, 1926 Number	August, 1926 Per Cent	Eight Months, 1926 Number	Eight Months, 1926 Per Cent
Motorcycle Rims				
24 x 3	1,761	0.1	18,115	0.1
26 x 3	8,616	0.3	63,767	0.4
28 x 3	.....	...	2,952	0.0
Clincher Rims				
30 x 3	.....	...	2,302	0.0
30 x 3½	169,462	7.1	2,050,121	11.6
31 x 4	2,550	0.1	33,016	0.2
Balloon Rims				
25 x 3½	.....	...	722	0.0
26 x 3½	64,010	2.7	186,682	1.1
27 x 3½	186	0.0	4,041	0.0
28 x 3½	987,323	41.5	7,325,215	41.5
29 x 3½	204	0.0	204	0.0
26 x 4	20,907	0.9	21,067	0.1
27 x 4	.....	...	92	0.0
28 x 4	226,609	9.6	2,944,711	16.6
29 x 4	351,453	14.8	1,421,060	8.0
30 x 4	1,790	0.1	7,890	0.0
27 x 4½	2,776	0.1	2,887	0.0
29 x 4½	15,675	0.7	284,773	1.6
30 x 4½	207,578	8.7	1,185,584	6.7
31 x 4½	2,323	0.1	29,453	0.2
30 x 5	13,628	0.6	196,416	1.1
31 x 5	34,771	1.5	317,457	1.8
33 x 6	24,012	1.0	98,114	0.6
High Pressure Rims				
30 x 3½	13,838	0.6	111,635	0.6
32 x 3½	2,412	0.1	8,564	0.0
31 x 4	.....	...	10,503	0.1
32 x 4	32,663	1.4	138,293	0.8
33 x 4	2,435	0.1	11,000	0.1
34 x 4	.....	...	54	0.0
32 x 4½	45,445	1.9	311,310	1.8
33 x 4½	225	0.0	1,019	0.0
34 x 4½	5,081	0.2	22,895	0.1
36 x 4½	.....	...	.....	...
Truck, 20-inch				
30 x 5	109,145	4.6	588,047	3.3
32 x 6	14,383	0.6	141,074	0.8
34 x 7	7,560	0.3	35,049	0.2
36 x 8	1,914	0.1	7,604	0.0
40 x 10	64	0.0	468	0.0
Truck, 24-inch				
34 x 5	2,071	0.1	36,334	0.2
36 x 6	3,541	0.1	55,633	0.3
38 x 7	1,210	0.0	11,802	0.1
40 x 8	931	0.0	7,987	0.0
44 x 10	298	0.0	857	0.0
36 x 7	.....	...	1,186	0.0
Total	2,378,850	100.0	17,697,955	100.0
Experimental 36 x 8 airplane	318			

August, 1926	Per Cent	Eight Months, 1926	Per Cent
Motorcycle	0.4	Motorcycle	0.5
Clincher	7.2	Clincher	11.8
Balloon	82.3	Balloon	79.3
High pressure	4.3	High pressure	3.5
Truck—20-inch	5.6	Truck—20-inch	4.3
Truck—24-inch	0.2	Truck—24-inch	0.6

Note—3,543 of the 26 x 3 M. C. rims are 3" auto section.

RUBBER DIVISION SURVEY OF DEALERS' STOCKS OF AUTOMOBILE TIRES AND TUBES

The Rubber Division of the Bureau of Foreign and Domestic Commerce will begin the compilation of its report on dealers' stocks of tires and tubes on hand October 1, 1926. Questionnaires are being mailed to over 150,000 dealers and the cooperation of all firms who receive the questionnaire is necessary for the best results, and tire dealers should see that their reports are promptly returned in the franked envelopes supplied by the department, which require no postage.

Metal Market Review

New York

The markets in general continue quiet and steady, while the recently published statistics regarding copper and zinc have apparently had little effect in causing changes in prices. Lead is quoted a little lower, but tin has reached the highest level in several years. September is apparently continuing the activity of the steel industry which has made the two mid-summer months stand out far above the July-August average for the five preceding years.

ALUMINUM. There are many indications of increased world output, as heavy shipments have been received in recent weeks from Europe, especially from Germany. Canada's new plant is expected to contribute increased tonnages, while extensions to the Norwegian works will probably result in increasing that country's output by 24,000 tons annually.

ANTIMONY. Prices for antimony remain firm. It has been stated that the Chinese have large stocks, and are holding them for higher prices.

COPPER. During the past few weeks there has been little change in the price of copper. One authority claims that shipments to domestic consumers increased 17 per cent during the first eight months of the year as compared with the corresponding period of 1925, exports, however, decreasing during the time mentioned by 21 per cent. It is understood that important foreign interests are lining up against the export combine which American producers are seeking to perfect.

LEAD. During the middle of September the American Smelting & Refining Co. announced a reduction of $3 a ton, to 8.75 cents a pound, New York. Since July 30 the price of lead had stood at 8.90 cents. Consumption is said, however, to be very heavy and extensive buying during the next few weeks will be necessary.

STEEL. Ingot production during August represented, according to *The Iron Age*, the highest rate for the month on record, and bringing the eight months' total for this year to 31,916,000 tons, or 10½ per cent beyond the corresponding period of 1925. The August output was 154,022 gross tons a day, the next largest August production having been in 1920, at 137,016 tons a day.

TIN. During the middle of September high price records for this metal were broken several times for the period since 1919. The market for spot Straits tin reached 71 cents a pound as against 72 cents in 1919, and $1.10 for 1918. It is said that consumers are now leaving the market to the speculative element.

ZINC. Demand for this metal continues in fair volume, and world conditions are beginning to show improvement.

Basic Metals

SEPTEMBER 23, 1926

	Cents per pound
Aluminum, virgin, 98@99 per cent	27.00 @
Antimony	15.00 @
Copper—Lake, spot	14.375 @
Electrolytic, spot	14.35 @
Castings, refinery	13.375 @
Lead, spot, New York	8.70 @ 8.75
Lead, spot, East St. Louis	8.45 @ 8.50
Nickel, ingot, pound	35.00 @
Tin, spot	69.00 @
Zinc, spot, New York	7.725 @ 7.75
Zinc, spot, East St. Louis	7.375 @ 7.40

Steel Wire

	Base per 100 lbs.
Bright, plain wire No. 9 gage	$2.50 @
Annealed fence wire	2.65 @
Galvanized wire No. 9	3.10 @
Spring wire	3.50 @

Copper Wire

BASE PRICE F. O. B. FACTORY

	Cents per pound
Bare copper wire	16.50 @
No. 6. B. & S. gage	16.50 @
No. 8 B. & S. gage	16.50 @
No. 14 B. & S.	17.50 @

United Kingdom Rubber Statistics

Imports

Unmanufactured Crude rubber From—	July, 1926 Pounds	July, 1926 Value	Seven Months Ended July, 1926 Pounds	Seven Months Ended July, 1926 Value
Straits Settlements	9,611,400	£823,195	72,677,200	£8,649,663
Federated Malay States	4,453,700	377,051	33,872,600	3,848,270
British India	728,500	59,972	6,852,800	868,034
Ceylon and Dependencies	2,989,800	240,637	24,088,500	2,825,245
Other Dutch possessions in Indian Seas	2,191,700	186,242	11,010,800	1,222,962
Dutch East Indies (except other Dutch possessions in Indian Seas)	3,071,900	257,844	16,832,800	1,880,102
Other countries in East Indies and Pacific, not elsewhere specified	40,000	2,751	1,133,600	131,495
Brazil	664,600	49,987	6,165,500	725,276
Peru	15,600	1,045	99,000	8,336
South and Central America (except Brazil and Peru)	142,500	12,164	216,700	21,326
West Africa:				
French West Africa	13,500	729	1,321,300	118,590
Gold Coast	43,800	2,873	643,600	46,278
Other parts of West Africa	130,300	8,591	1,087,200	110,823
East Africa, including Madagascar	22,100	1,277	827,400	91,054
Other countries	199,800	22,664	943,200	119,677
Totals	24,300,200	£2,047,022	177,772,200	£20,667,131
Waste and reclaimed rubber	391,800	£5,441	4,092,800	£77,564
Gutta percha and balata	741,600	97,281	4,962,500	666,316
Rubber substitutes	15,100	1,035	73,900	4,053
Totals	1,148,500	£103,757	9,129,200	£747,934
Manufactured				
Boots and shoes.....*doz. pairs*	42,026	£108,731	271,642	£561,748
Tires and tubes				
Pneumatic				
Outer covers	.....	355,575	.....	2,404,652
Inner tubes	.....	41,191	.....	396,557
Solid tires	.....	20,174	.....	184,993
Other rubber manufactures	.....	122,855	.....	984,496
Totals	.....	£648,526	.....	£4,532,446

Exports

Unmanufactured				
Waste and reclaimed rubber	1,053,900	£13,065	13,842,600	£183,744
Rubber substitutes	93,600	1,988	588,400	13,399
Totals	1,147,500	£15,053	14,431,000	£197,143
Manufactured				
Boots and shoes.....*doz. pairs*	24,342	£42,881	134,699	£211,999
Tires and tubes				
Pneumatic				
Outer covers	.....	323,618	.....	1,982,754
Inner tubes	.....	70,580	.....	420,458
Solid tires	.....	42,717	.....	263,051
Other rubber manufactures	.....	272,086	.....	1,789,578
Totals	.....	£751,882	.....	£4,667,840

Exports—Colonial and Foreign

Unmanufactured	July, 1926 Pounds	July, 1926 Value	Seven Months Ended July, 1926 Pounds	Seven Months Ended July, 1926 Value
Crude Rubber From—				
Russia	296,300	£35,631	7,895,300	£1,447,204
Sweden, Norway and Denmark	194,200	22,230	1,371,800	185,573
Germany	1,395,300	132,446	7,159,600	879,465
Belgium	332,800	29,001	1,569,100	195,321
France	1,108,700	100,652	13,610,700	1,845,293
Spain	62,900	6,279	498,100	76,364
Italy	145,600	15,672	4,842,100	712,095
Other European countries	147,800	13,928	882,200	121,353
United States	5,107,000	511,958	34,837,600	5,208,205
Canada	227,700	37,180	256,900	42,576
Other countries	121,500	12,612	425,900	66,048
Totals	9,139,800	£917,589	73,349,300	£10,779,497
Waste and reclaimed rubber	45,100	£628	173,400	£4,890
Gutta percha and balata	30,400	4,163	210,300	30,480
Rubber substitutes	2,200	60	2,200	60
Totals	9,217,500	£922,440	73,735,200	£10,814,927
Manufactured				
Boots and shoes.....*doz. pairs*	726	£2,563	4,601	£12,823
Tires and tubes				
Pneumatic				
Outer covers	.....	43,074	.....	230,431
Inner tubes	.....	5,324	.....	35,562
Solid tires	.....	929	.....	10,564
Other rubber manufactures	.....	9,261	.....	44,884
Totals	.....	£61,151	.....	£334,264

Dominion of Canada Rubber Statistics

Imports of Crude and Manufactured Rubber

Unmanufactured	June, 1926 Pounds	June, 1926 Value	Three Months Ended June, 1926 Pounds	Three Months Ended June, 1926 Value
Rubber, gutta percha, etc. From United States	2,424,056	$1,227,414	8,169,149	$4,392,671
Straits Settlements	206,080	89,393	781,691	416,728
Dutch East Indies	31,917	17,835	113,348	69,067
Other countries	.....	.....	11,200	15,600
Totals	2,662,053	$1,334,642	9,075,388	$4,894,066
Rubber, recovered	666,276	$65,347	1,830,767	$237,160
Rubber, powdered and rubber or gutta percha scrap	1,101,148	68,208	2,107,477	121,861
Balata	1,684	1,157	2,577	1,859
Rubber substitutes	29,297	1,834	154,835	13,964
Total	1,798,405	$136,546	4,095,656	$374,844
Partly Manufactured				
Hard rubber sheets and rods	6,296	$3,650	28,463	$17,340
Hard rubber tubes	.....	1,422	.....	2,170
Rubber thread not covered	6,808	10,830	31,304	52,870
Totals	13,104	$15,902	59,767	$72,380
Manufactured				
Belting	.....	$22,942	.....	$58,530
Hose	.....	20,643	.....	55,398
Packing	.....	6,376	.....	13,714
Boots and shoes.....*pairs*	4,666	4,308	5,602	7,826
Clothing, including waterproofed	.....	15,427	.....	68,133
Gloves	.....	2,149	.....	5,582
Hot water bottles	.....	581	.....	2,125
Tires, solid.....*number*	67	4,344	247	12,382
Tires, pneumatic.....*number*	8,819	30,822	16,151	77,500
Tires, tubes.....*number*	1,701	3,811	5,177	13,004
Elastic, round or flat	.....	15,607	.....	45,604
Mats and matting	.....	2,883	.....	9,739
Cement	.....	9,392	.....	22,836
Golf balls.....*dozen*	7,284	29,176	20,376	80,679
Heels, rubber.....*pairs*	32,701	2,040	64,968	4,456
Other rubber manufactures	.....	118,724	.....	363,592
Totals	.....	$289,225	.....	$841,100
Totals, rubber imports	.....	$1,776,315	.....	$6,182,390

Exports of Domestic and Foreign Rubber Goods

Unmanufactured	June, 1926 Produce of Canada Value	June, 1926 Re-exports of Foreign Goods Value	Three Months Ended June, 1926 Produce of Canada Value	Three Months Ended June, 1926 Re-exports of Foreign Goods Value
Crude and waste rubber	$21,717	.....	$62,994	.....
Totals	$21,717	.....	$62,994	.....
Manufactured				
Belting	$48,254	.....	$126,349	.....
Canvas shoes with rubber soles	364,614	.....	903,119	.....
Boots and shoes	134,453	.....	296,968	.....
Clothing, including waterproofed	855	.....	9,161	.....
Hose	25,612	.....	63,275	.....
Tires, casings	1,239,443	.....	3,526,331	.....
Inner tubes	247,764	.....	686,237	.....
Solid	27,306	.....	62,147	.....
Other rubber manufacturers	44,272	$12,928	139,997	$41,249
Totals	$2,132,573	$12,928	$5,813,584	$41,249
Totals, rubber exports	$2,154,290	$12,928	$5,876,578	$41,249

Landings, Deliveries and Stocks in London and Liverpool as Returned by the Warehouses and Wharves During the Month of July, 1926

	Landed for July	Delivered for July	Stocks, July 31st		
London	Tons	Tons	1926 Tons	1925 Tons	1924 Tons
Plantation	9,191	5,463	27,504	*4,058	51,829
Other grades	26	7	172	*21	112
Liverpool					
Plantation	†448	†286	†1,190	†270	†4,036
Pará and Peruvian	165	178	372	193	497
Other grades	....	2	....	19	210
Total tons, London and Liverpool	9,830	5,936	29,238	4,561	56,684

*Corrected by inspection.
†Official returns from the six recognized public warehouses.

Official India Rubber Statistics for the United States

Imports of Crude and Manufactured Rubber

	June, 1926		Twelve Months Ended June, 1926	
UNMANUFACTURED—*Free*	Pounds	Value	Pounds	Value
Crude rubber	55,776,297	$34,498,561	921,964,267	$603,565,535
Balata	32,194	13,756	1,204,384	579,412
Jelutong or Pontianak	1,684,101	368,907	15,141,782	2,331,553
Gutta percha	282,669	56,734	3,677,965	714,198
Guayule	902,154	209,388	10,670,951	2,756,136
Rubber scrap	1,781,119	113,430	37,317,715	1,561,907
Totals	60,458,534	$35,260,776	989,977,064	$611,508,741
Chicle *dutiable*	735,866	$389,071	12,887,047	$6,355,520
MANUFACTURED—*dutiable*				
Rubber belting	63,872	$40,884	744,319	$533,544
Rubber tires	1,218	13,432	[1]3,089	[1]41,515
Other rubber manufactures of substitutes for rubber	.....	97,172	.....	1,414,589
Totals	65,090	$151,488	747,408	$1,989,648

Exports of Foreign Merchandise

	June, 1926		Twelve Months Ended June, 1926	
RUBBER AND MANUFACTURES	Pounds	Value	Pounds	Value
Crude rubber	2,474,518	$1,371,217	36,779,199	$26,387,983
Balata	6,413	3,123	521,085	299,079
Gutta percha and rubber substitutes and scrap	22,953	1,147	114,454	35,043
Rubber manufactures	.....	3,717	.....	183,389
Totals	.....	$1,379,204	.....	$26,905,494

Exports of Domestic Merchandise

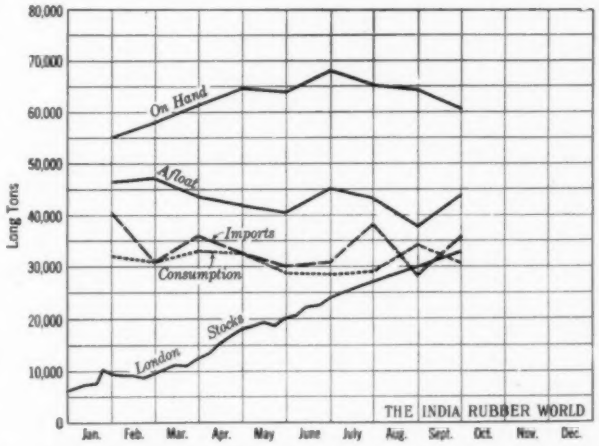
MANUFACTURED				
India rubber				
Reclaimed	1,273,405	$124,989	11,598,306	$1,373,344
Scrap and old	2,788,300	151,438	27,018,400	1,764,503
Footwear				
Boots *pairs*	60,125	145,888	818,907	1,951,483
Shoes *pairs*	119,487	95,363	1,246,532	1,101,641
Canvas shoes with rubber soles *pairs*	428,559	308,574	4,929,662	3,684,821
Rubber water bottles and fountain syringes *number*	20,382	13,631	270,267	199,256
Rubber gloves *doz. pairs*	4,619	17,070	[1]32,952	[1]123,475
Other druggists' rubber sundries	.....	37,459	.....	971,987
Bathing caps *dozen*	7,316	17,838	156,570	332,671
Hard rubber goods				
Electrical hard rubber goods	48,928	17,806	997,597	344,493
Other hard rubber goods	.....	35,948	.....	472,604
Tires				
Casings, automobile *number*	99,345	1,874,807	1,556,753	24,709,578
Tubes, automobile *number*	87,972	241,030	1,333,618	3,391,194
Other casings and tubes *number*	6,599	18,179	82,392	263,377
Solid tires for automobiles and motor trucks *number*	6,703	263,570	114,072	3,812,321
Others	79,650	28,680	1,899,320	571,204
Tire accessories	.....	127,618	.....	1,468,016
Rubber and friction tape	104,351	33,446	[1]462,289	[1]151,584
Belting	351,313	217,298	4,119,992	2,659,167
Hose	521,963	213,019	5,989,385	2,458,181
Packing	165,983	83,035	2,176,275	1,066,188
Soles and heels	278,210	93,992	3,787,891	1,212,818
Thread	97,378	129,129	1,725,321	2,234,480
Rubber bands and erasers	44,485	38,556	[1]299,064	[1]243,063
Other rubber manufactures	.....	196,996	.....	2,271,755
Totals	.....	$4,525,359	.....	$58,833,204
Rubber toys, balls and balloons	.....	$52,999	.....	$996,630

[1]Beginning Jan. 1, 1926.

Rubber Imports, Consumption and Stocks

The graph below covers the rubber supply and consumption for the current year including estimated figures for September.

Observation of the chart shows that the stock of crude rubber on hand in the United States has steadily declined since June 30 when it was 64,000 tons, to about 61,000 tons September 1. This decrease, averaging 1,000 tons monthly, is due to heavy tire production. The statistics for rubber afloat, imports, consumption and



Graph of U. S. Crude Rubber Imports, Consumption and Stocks

London stocks are centering about a closely balanced position and this is seen in the close approach of the curves of all of these items for September.

Stocks afloat to the United States are estimated at 40,000 tons for September. These represent August shipments from the Far East and about 7,000 tons above those of July afloat in August. Imports dropped suddenly in August but were stimulated for September by the increase in tire output, the gain amounting to 3,500 tons but it is still below the year's peaks of January, March and July. The curve of consumption shows a gain corresponding approximately to the decline of stocks on hand. London stocks continue to advance at a steady rate and are now not far from 40,000 tons.

UNITED STATES CRUDE RUBBER IMPORTS, CONSUMPTION AND STOCKS

			Stocks			
1925	Imports Tons	Consumption Tons	On Hand Tons	Afloat Tons	London Tons	Singapore and Penang Tons
Twelve months ...	388,000	385,000	51,000*	48,000*	.....	.....
1926						
January	40,500	32,000	55,000	46,300	10,100	15,726†
February	31,000	31,000	58,000	47,000	9,100	13,653
March	36,000	33,000	61,500	43,500	12,800	18,389
April	32,700	32,500	64,400	41,900	18,500	16,328
May	30,000	29,000	64,000	40,300	20,200	16,848
June	30,000	28,600	60,460	40,907	23,800	19,400
July	38,000	27,600	65,000	43,000	27,857	23,000
August	27,800	34,500	64,000	37,400	30,159	.....
Sept. (estimated)	35,500	31,000	61,000	44,000	‡‡33,249	.....

*December 31, 1925.
†The first of each month.
‡‡September 18, 1926.

United States Crude and Waste Rubber Imports for 1926 (By Months)

	Plantations	Parás	Africans	Centrals	Guayule	Mariçobas and Matto Grosso	Total 1926	Total 1925	Balata	Miscellaneous	Waste
January *tons*	36,372	856	791	515	153	10	38,697	29,960	94	607	1,227
February	31,832	1,548	227	250	204	6	34,067	23,456	19	728	729
March	40,177	1,426	334	256	482	2	42,677	33,914	30	1,264	324
April	30,766	854	164	392	494	8	32,678	27,231	35	864	216
May	27,915	1,431	199	449	417	..	30,411	36,889	52	932	173
June	27,915	960	246	568	418	..	30,107	30,337	41	1,076	208
July	35,537	800	36	419	295	..	37,087	33,918	10	1,141	372
August	24,431	640	175	496	240	..	25,982	31,584	40	840	1,033
Totals, 8 months, 1926 *tons*	254,945	8,515	2,172	3,332	2,703	26	271,693	.....	321	7,452	4,282
Totals, 8 months, 1925	231,467	9,664	2,071	1,731	2,213	143	.....	247,289	278	7,972	1,960

Compiled from statistics supplied by the Rubber Association of America, Inc.

Crude Rubber Arrivals at New York as Reported by Importers

Parás and Caucho

	Fine Cases	Medium Cases	Coarse Cases	Caucho Cases	Cametá Cases
AUGUST 16. By "Elmpark," Para.					
H. A. Astlett & Co.	178	6	24	38	....
Poel & Kelly, Inc.	....	....	45	....	....
AUGUST 17. By "Western World," Uruguay.					
Paul Bertuch & Co., Inc.	20	....	....	....	....
AUGUST 23. By "Aidan," Brazil.					
Paul Bertuch & Co., Inc.	220	....	....	130	....
General Rubber Co.	169	....	82	152	....
L. Littlejohn & Co., Inc.	266	1	2	29	....
Poel & Kelly, Inc.	154	....	78	225	....
SEPTEMBER 3. By "Hubert," Brazil.					
H. A. Astlett & Co., Inc.	411	5	395	7	....
Paul Bertuch & Co., Inc.	401	4	45	157	....
General Rubber Co.	384	5	80	96	35
L. Littlejohn & Co., Inc.	....	....	84	43	....
Poel & Kelly, Inc.	60	....	102	197	....
SEPTEMBER 9. By "Thespis," South America.					
General Rubber Co.	1,075	30	172	469	....
L. Littlejohn & Co., Inc.	162	2	33	14	....
Meyer & Brown, Inc.	....	....	....	‖70	....
SEPTEMBER 10. By "Cabedello," Brazil.					
Meyer & Brown, Inc.	§595	....	‖235	‖149	....

Plantations

	Cases
AUGUST 15. By "Bordeaux Maru," Far East.	
H. Muehlstein & Co., Inc.	239
AUGUST 16. By "Caronia," London.	
Poel & Kelly, Inc.	59
AUGUST 16. By "Laconia," London.	
Charles T. Wilson Co., Inc.	116
AUGUST 16. By "Margaret Dollar," Far East.	
Poel & Kelly, Inc.	†140
AUGUST 16. By "Minnekahda," London.	
Baird Rubber & Trading Co., Inc.	429
Rogers Brown & Crocker Bros., Inc.	198
Charles T. Wilson Co., Inc.	1,321
AUGUST 17. By "Cleveland," Hamburg.	
H. A. Astlett & Co.	70
AUGUST 17. By "Titan," Far East.	
Haldane Bierrie & Co., Inc.	120
AUGUST 18. By "Mahseer," Far East.	
H. A. Astlett & Co.	256
General Rubber Co.	1,090
Haldane Bierrie & Co., Inc.	150
L. Littlejohn & Co., Inc.	40
Meyer & Brown, Inc.	1,050
H. Muehlstein & Co., Inc.	272
AUGUST 18. By "Matheran," Far East.	
H. Muehlstein & Co., Inc.	351
AUGUST 21. By "Radnor," Far East.	
H. A. Astlett & Co.	560
Baird Rubber & Trading Co., Inc.	371
General Rubber Co.	2,348
L. Littlejohn & Co., Inc.	1,002
Meyer & Brown, Inc.	1,105
Meyer & Brown, Inc.	*100
H. Muehlstein & Co., Inc.	80
Poel & Kelly, Inc.	375
Raw Products Co.	266
Rogers Brown & Crocker Bros., Inc.	1,805
Charles T. Wilson Co., Inc. .....bales	60
AUGUST 21. By "Volendam," Rotterdam.	
General Rubber Co.	54
Haldane Bierrie & Co., Inc.	105
L. Littlejohn & Co., Inc.	285
Charles T. Wilson Co., Inc.	134
AUGUST 23. By "Pres. Wilson," Far East.	
H. A. Astlett & Co.	†150
AUGUST 23. By "Steel Age," Far East.	
H. A. Astlett & Co.	1,218
Baird Rubber & Trading Co., Inc.	300
General Rubber Co.	5,383
L. Littlejohn & Co., Inc.	1,635
Meyer & Brown, Inc.	776
H. Muehlstein & Co., Inc.	205
Poel & Kelly, Inc.	370
Rogers Brown & Crocker Bros., Inc.	150
Charles T. Wilson Co., Inc.	416
AUGUST 24. By "American Trader," London.	
General Rubber Co.	100
Charles T. Wilson Co., Inc.	53
AUGUST 24. By "Franconia," Liverpool.	
Baird Rubber & Trading Co., Inc.	232
Poel & Kelly, Inc.	100
Charles T. Wilson Co., Inc.	21
AUGUST 24. By "London Exchange," London.	
Charles T. Wilson Co., Inc.	96
AUGUST 24. By "Minnetonka," London.	
H. A. Astlett & Co.	140
Baird Rubber & Trading Co., Inc.	337
General Rubber Co.	2,137
L. Littlejohn & Co., Inc.	25
Meyer & Brown, Inc.	150
Poel & Kelly, Inc.	708
AUGUST 26. By "City of Canton," Far East.	
H. A. Astlett & Co.	2,094
Baird Rubber & Trading Co., Inc.	300
Baird Rubber & Trading Co., Inc.	*100
General Rubber Co.	3,837
L. Littlejohn & Co., Inc.	2,153
Meyer & Brown, Inc.	2,921
H. Muehlstein & Co., Inc.	250
Poel & Kelly, Inc.	1,959
Raw Products Co.	150
Rogers Brown & Crocker Bros., Inc.	748
Charles T. Wilson Co., Inc.	756
AUGUST 26. By "Clan Ronald," Far East.	
H. A. Astlett & Co.	53
General Rubber Co.	149
Haldane Bierrie & Co., Inc.	200
L. Littlejohn & Co., Inc.	109
Meyer & Brown, Inc.	153
H. Muehlstein & Co., Inc.	257
Poel & Kelly, Inc.	67
Charles T. Wilson Co., Inc.	266
AUGUST 26. By "Pres. Monroe," Far East.	
H. A. Astlett & Co.	2,344
Baird Rubber & Trading Co., Inc.	1,860
Bowring & Co.	150
General Rubber Co.	3,086
Adolph Hirsch & Co., Inc.	112
L. Littlejohn & Co., Inc.	3,258
Meyer & Brown, Inc.	1,893
H. Muehlstein & Co., Inc.	577
Poel & Kelly, Inc.	560
Raw Products Co.	200
Rogers Brown & Crocker Bros., Inc.	815
Charles T. Wilson Co., Inc.	836
AUGUST 27. By "Nieuw Amsterdam," Rotterdam.	
L. Littlejohn & Co., Inc.	72
AUGUST 27. By "Rakuyn Maru," Far East.	
Poel & Kelly, Inc.	†57
AUGUST 28. By "Savoia," Far East.	
Baird Rubber & Trading Co., Inc.	‡120
AUGUST 28. By "West Prospect," Far East.	
Poel & Kelly, Inc.	†144
AUGUST 30. By "American Merchant," London.	
General Rubber Co.	102
Poel & Kelly, Inc.	280
Charles T. Wilson Co., Inc.	719
AUGUST 30. By "Canadian Farmer," Far East.	
Poel & Kelly, Inc.	†200
AUGUST 30. By "Carmania," London.	
H. A. Astlett & Co.	187
Baird Rubber & Trading Co., Inc.	100
General Rubber Co.	3,503
L. Littlejohn & Co., Inc.	130
Poel & Kelly, Inc.	34
AUGUST 30. By "Samaria," Liverpool.	
General Rubber Co.	504
Poel & Kelly, Inc.	19
Charles T. Wilson Co., Inc.	19
AUGUST 30. By "Soemba," Far East.	
H. A. Astlett & Co.	657
Baird Rubber & Trading Co., Inc.	50
Paul Bertuch & Co., Inc.	15
General Rubber Co.	4,452
Haldane Bierrie & Co., Inc.	59
L. Littlejohn & Co., Inc.	952
Meyer & Brown, Inc.	1,486
H. Muehlstein & Co., Inc.	720
Poel & Kelly, Inc.	1,571
Raw Products Co.	153
Rogers Brown & Crocker Bros., Inc.	186
Charles T. Wilson Co., Inc.	786
AUGUST 31. By "Silveray," Far East.	
H. A. Astlett & Co.	966
Baird Rubber & Trading Co., Inc.	74
General Rubber Co.	2,430
L. Littlejohn & Co., Inc.	3,203
Meyer & Brown, Inc.	1,734
H. Muehlstein & Co., Inc.	358
Poel & Kelly, Inc.	341
Rogers Brown & Crocker Bros., Inc.	1,825
Charles T. Wilson Co., Inc.	716
AUGUST 31. By "Westphalia," Hamburg.	
Charles T. Wilson Co., Inc.	59
SEPTEMBER 1. By "West Carmona," Far East.	
General Rubber Co.	†400
SEPTEMBER 2. By "Roseric," Far East.	
H. A. Astlett & Co.	44
Bowring & Co.	70
General Rubber Co.	100
L. Littlejohn & Co., Inc.	1,952
Meyer & Brown, Inc.	80
Poel & Kelly, Inc.	104
Charles T. Wilson Co., Inc.	100
SEPTEMBER 3. By "City of Benares," Far East.	
H. A. Astlett & Co.	240
Baird Rubber & Trading Co., Inc.	730
General Rubber Co.	22
L. Littlejohn & Co., Inc.	2,835
Meyer & Brown, Inc.	412
Poel & Kelly, Inc.	57
Raw Products Co.	664
Charles T. Wilson Co., Inc.	443
SEPTEMBER 3. By "Rotterdam," Rotterdam.	
Rogers Brown & Crocker Bros., Inc.	100
SEPTEMBER 6. By "American Banker," Far East.	
Poel & Kelly, Inc.	34
SEPTEMBER 6. By "Minnewaska," London.	
General Rubber Co.	1,446
L. Littlejohn & Co., Inc.	2,238
H. Muehlstein & Co., Inc.	168
Raw Products Co.	219
Charles T. Wilson Co., Inc.	559
SEPTEMBER 6. By "Pennland," Antwerp.	
Bowring & Co.	134
SEPTEMBER 7. By "Naperian," Far East.	
Poel & Kelly, Inc.	70
Poel & Kelly, Inc.	*297
SEPTEMBER 7. By "Tuscania," London.	
Poel & Kelly, Inc.	335
SEPTEMBER 8. By "Dacre Castle," Far East.	
H. A. Astlett & Co.	1,559
Baird Rubber & Trading Co., Inc.	730
General Rubber Co.	9,643
Haldane Bierrie & Co., Inc.	502
Hood Rubber Co.	*132
L. Littlejohn & Co., Inc.	4,345
Meyer & Brown, Inc.	2,362
Meyer & Brown, Inc.	*150
Poel & Kelly, Inc.	357
Rogers Brown & Crocker Bros., Inc.	1,485
Charles T. Wilson Co., Inc.	939
SEPTEMBER 10. By "Asiatic Prince," Far East.	
H. A. Astlett & Co.	1,851
Baird Rubber & Trading Co., Inc.	*96
Baird Rubber & Trading Co., Inc.	520
General Rubber Co.	2,308
Hood Rubber Co.	*154
L. Littlejohn & Co., Inc.	5,396
Meyer & Brown, Inc.	2,083
Meyer & Brown, Inc.	*67
Raw Products Co.	340
Rogers Brown & Crocker Bros., Inc.	2,370
SEPTEMBER 10. By "Pres. Harrison," Far East.	
H. A. Astlett & Co.	2,270
Baird Rubber & Trading Co., Inc.	958
Baird Rubber & Trading Co., Ins.	*50
General Rubber Co.	2,418
Haldane Bierrie & Co., Inc.	1,400
Hood Rubber Co.	*317
L. Littlejohn & Co., Inc.	3,493
Meyer & Brown, Inc.	2,129
Poel & Kelly, Inc.	570
Rogers Brown & Crocker Bros., Inc.	1,106
SEPTEMBER 11. By "Caronia," London.	
General Rubber Co.	27
SEPTEMBER 11. By "Colorado," Far East.	
H. A. Astlett & Co.	3,261
Baird Rubber & Trading Co., Inc.	1,598
Baird Rubber & Trading Co., Inc.	*200
General Rubber Co.	8,473
Haldane Bierrie & Co., Inc.	1,850
Adolph Hirsch & Co., Inc.	240
Hood Rubber Co.	*305
L. Littlejohn & Co., Inc.	8,156
Meyer & Brown, Inc.	5,391
Meyer & Brown, Inc.	*250
Raw Products Co.	720
Rogers Brown & Crocker Bros., Inc.	1,710
SEPTEMBER 11. By "Minnekahda," London.	
Baird Rubber & Trading Co., Inc.	725
General Rubber Co.	56
L. Littlejohn & Co., Inc.	1,775
Meyer & Brown, Inc.	341
Raw Products Co.	446

*Arrived at Boston.
†Arrived at Los Angeles.
‡Arrived at San Francisco.
§Pelles.
‖Packages.

	Cases
SEPTEMBER 12. By "Ryndam," Europe.	
L. Littlejohn & Co., Inc.	383
SEPTEMBER 13. By "Belgenland," Antwerp.	
Bowring & Co.	125
SEPTEMBER 13. By "City of Dunedin," Far East.	
H. A. Astlett & Co.	200
Hood Rubber Co.	*409
L. Littlejohn & Co., Inc.	2,381
Meyer & Brown, Inc.	796
SEPTEMBER 13. By "Laconia," London.	
Raw Products Co.	50
SEPTEMBER 13. By "Swedan Maru," Europe.	
L. Littlejohn & Co., Inc.	140

* Arrived at Boston.

	Cases
SEPTEMBER 16. By "City of Salisbury," Far East.	
Baird Rubber & Trading Co., Inc.	312

Africans

	Cases
AUGUST 19. By "La Bourdonnais," Bordeaux.	
L. Littlejohn & Co., Inc.	475
AUGUST 23. By "Franconia," Liverpool.	
L. Littlejohn & Co., Inc.	16
AUGUST 27. By "Skaneland," Marseilles.	
Poel & Kelly, Inc.	90
AUGUST 30. By "Samaria," Liverpool.	
Poel & Kelly, Inc.	52
SEPTEMBER 9. By "Albert Ballin," Europe.	
L. Littlejohn & Co., Inc.	206

Balata

	Cases
SEPTEMBER 3. By "Hubert," Para.	
H. A. Astlett & Co.	102
SEPTEMBER 12. By "Thespis," Brazil.	
General Rubber Co.	34

Guayule

	Cases
AUGUST 23. By "Monterey," Mexico.	
Baird Rubber & Trading Co., Inc.	560
AUGUST 29. By "Panuco," Mexico.	
Continental Rubber Co. of New York	1,035
SEPTEMBER 5. By "Mexico," Mexico.	
Continental Rubber Co. of New York	560
SEPTEMBER 13. By "Canto," Mexico.	
Continental Rubber Co. of New York	2,155

Imports of Crude Rubber Into the United States by Customs Districts

	*July, 1926		Seven Months Ended *July, 1926	
	Pounds	Value	Pounds	Value
Massachusetts	1,997,843	$826,123	21,789,523	$14,721,290
Buffalo	.....	.....	41,199	21,730
St. Lawrence	3,880	611	3,880	611
New York	76,785,826	31,507,069	503,843,010	328,456,634
Philadelphia	.....	.....	8,856	3,225
Maryland	.....	.....	3,215,454	2,100,961
New Orleans	1,477	517	4,707	1,835
Los Angeles	942,029	459,987	10,836,039	7,455,967
San Francisco	257,003	114,305	1,121,058	686,981
Oregon	112,000	50,962	246,780	155,265
Washington	.....	.....	1,008,000	662,200
Minnesota	.....	.....	123,200	71,251
Michigan	22,429	7,850	52,511	23,394
Ohio	3,000	895	70,225	43,843
Colorado	112,440	93,151	707,500	653,565
Totals	80,237,927	$33,061,470	543,071,942	$355,058,752

*Including Latex Dry Rubber Content.

Dealers' Stocks of Rubber

An official cablegram from Singapore to the Malay States Information Agency, 88 Cannon street, London, E. C. 4, England, states that dealers stocks of rubber on August 31, 1926, were in Singapore, 19,865 tons, and in Penang 3,497 tons.

British Malaya

Rubber Exports

An official cablegram from Singapore to the Malay States Information Agency, 88 Cannon street, London, E. C. 4, England, states that the amount of rubber exported from British Malaya in the month of August last totaled 34,625 tons. The amount of rubber imported was 13,595 tons, of which 11,031 tons were declared as wet rubber. The following are comparative statistics:

	1925		1926	
	Gross Exports Tons	Foreign Imports Tons	Gross Exports Tons	Foreign Imports Tons
January	19,183	10,132	30,452	10,237
February	21,622	10,071	30,440	8,306
March	26,836	13,399	35,012	14,800
April	22,414	11,750	23,727	10,565
May	26,667	12,979	31,231	10,604
June	27,894	14,706	30,624	11,764
July	24,809	16,192	28,824	15,280
August	27,753	12,025	34,625	13,595
Totals	197,178	101,254	244,935	95,151

Distribution

The following is a comparative return of distribution of shipments during the months of July and August, 1926.

	July, 1926 Tons	August, 1926 Tons
United Kingdom	6,775	7,767
United States	17,962	22,124
Continent of Europe	2,495	2,036
British possessions	553	937
Japan	1,032	1,753
Other foreign countries	7	8
Totals	28,824	34,625

Inventory—Production—Domestic Shipments of Pneumatic Casings—Inner Tubes—Solid Tires—Rubber and Fabric Consumption

Inventories of all classes of tires and tubes, according to Rubber Association statistics, showed declines during July, while the prosperous state of the industry is still further indicated by increases for the month in shipments, with the single exception of solid and cushion tires. Particularly noteworthy is the gain in shipments of high pressure inner tubes, from 3,180,465 in June to 4,310,981 in July. The following figures represent large advances: shipments of balloon casings for the year 1924, 3,551,325; in 1925, 14,628,137; in first seven months of 1926, 11,638,403. The totals for balloon inner tubes are: shipments during the year 1924, 2,992,128; in 1925, 14,856,699; in first seven months of 1926, 12,394,022.

	High Pressure Pneumatic Casings						Balloon Casings			Solid and Cushion Tires		
	Cord			Fabric								
	Inventory*	Production	Total Shipments	Inventory*	Production	Total Shipments	Inventory*	Production	Total Shipments	Inventory*	Production	Total Shipments
Twelve mos. 1925	3,723,296	23,631,807	22,685,933	607,681	6,433,865	7,211,608	1,775,428	15,567,644	14,628,137	148,080	758,900	800,395
1926												
January	4,453,490	1,621,383	1,045,302	810,883	402,784	184,951	2,195,922	1,416,409	1,000,490	170,674	57,928	34,361
February	4,907,181	1,796,189	1,187,990	978,152	254,537	103,127	2,487,498	1,598,246	1,285,999	196,477	59,318	29,629
March	5,159,199	1,840,268	1,526,416	1,217,416	396,746	218,490	2,626,745	1,855,022	1,676,170	218,991	47,218	37,369
April	5,187,115	1,597,394	1,622,690	1,327,251	300,849	193,376	2,831,328	2,111,056	1,919,060	214,115	49,401	51,025
May	4,868,505	1,492,951	1,848,177	1,288,434	189,908	236,740	3,100,464	2,084,687	1,823,411	210,525	44,302	46,693
June	4,503,647	1,789,752	2,136,057	1,124,437	79,084	260,782	3,348,039	2,197,580	1,895,997	211,633	42,294	48,824
July	3,803,823	1,704,050	2,407,726	893,611	89,858	307,941	3,246,344	1,918,251	2,037,276	177,962	33,677	47,294

	High Pressure Inner Tubes			Balloon Inner Tubes		
	Inventory*	Production	Total Shipments	Inventory*	Production	Total Shipments
Twelve mos. 1925	6,489,331	45,864,008	45,887,316	1,995,277	16,096,518	14,856,699
1926						
January	8,297,117	3,537,722	1,706,680	2,473,366	1,569,248	1,085,352
February	9,966,723	3,316,739	1,568,305	2,850,865	1,801,922	1,233,633
March	11,106,395	3,076,338	1,936,927	3,241,677	2,196,118	1,803,394
April	11,629,673	2,293,701	1,785,173	3,875,828	2,620,937	2,002,765
May	11,405,939	2,123,292	2,568,471	4,449,433	2,488,625	2,159,744
June	10,337,404	2,162,154	3,180,465	4,844,588	2,465,646	1,993,353
July	8,262,293	2,427,594	4,310,981	4,686,819	1,869,089	2,115,751

	Cotton and Rubber Consumption in casings, tubes, solid and cushion tires	
	Cotton Fabric Pounds	Crude Rubber Pounds
Twelve mos. 1925	168,295,927	552,389,272
1926		
January	13,197,979	44,527,984
February	13,250,686	43,160,777
March	14,197,612	45,497,208
April	13,929,728	43,802,340
May	13,278,827	40,952,689
June	14,021,470	42,913,840
July	14,049,922	42,189,044

* *As of December 31, 1925. Compiled from Rubber Association figures representing 75 per cent of the industry.*

INDIA RUBBER WORLD
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Vol. 75 October 1, 1926 No. 1

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Our Publicity Page

Patent Research Records

FROM its inception *The India Rubber World* was designed as a rubber trade journal and a record of the commercial, scientific and technical progress of the industry. As the rubber industry developed, new departments have been added to the paper in order to meet the special needs of manufacturers, chemists, engineers, designers, inventors and research men.

Large research organizations equip their libraries with complete files of United States and foreign patent office gazettes and copies of specifications of special patents. These patents are segregated and departmentalized in *The India Rubber World* which, for practical purposes, affords the individual rubber chemist and engineer a more valuable and complete monthly record of foreign and domestic abstracts of rubber patents. These records have been accumulating for many years and afford convenient access to the technology of rubber.

The remarkable expansion of the rubber industry came with the development of the pneumatic tire. In that period, which is still in progress, chemical and mechanical invention has been remarkably active and its record is correspondingly indispensable for the factory scientist.

Patent Abstracts

United States and foreign patents relating to rubber chemistry, preparation of crude rubber, reclaims, compounding ingredients, etc., are abstracted each month in the chemical department. Similarly for rubber engineers, all patents relating to machines, mechanical equipment and processes are listed in the machinery department. Regularly the more important of these, usually 8 or 10, are illustrated and briefly described to emphasize their especial importance. This service has frequently been the means of not only informing rubber manufacturers concerning new aids to competitive production of goods, but it has served to introduce to the industry new machines that have special adaptations to rubber goods making.

Every important new process patent, both chemical and mechanical, is recorded with an appropriate abstract from the patent specification making clear its scope. In cases of specially notable process developments a full account is given embodying manufacturing details and applications.

Trade Marks and Designs

Manufacturers and dealers in rubber goods, and those who make and supply rubber chemicals and compounding ingredients, find the monthly lists of trade marks and designs a practical help. These lists cover all rubber articles trade marked in the United States, Canada, United Kingdom, New Zealand and Germany. These valuable references are not only capable of saving duplication and inadvertent interfering selections, but they carry a wealth of practical suggestions for those who wish to originate effective trade marks and designs.

Legal Decisions

All important decisions relating to legal actions in the rubber industry are appropriately briefed and recorded. They are thus made more easily accessible to the rubber trade in *The India Rubber World* than in the original records. The value of these records to the legal profession in search of past decisions consists in their segregation which eliminates expensive and tedious research in the preparation of cases. The patent records included in the above enumeration make available to our regular subscribers the gist of rubber trade development without the outlay of time, labor and cost of the official documents, simply for the price of subscription.

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